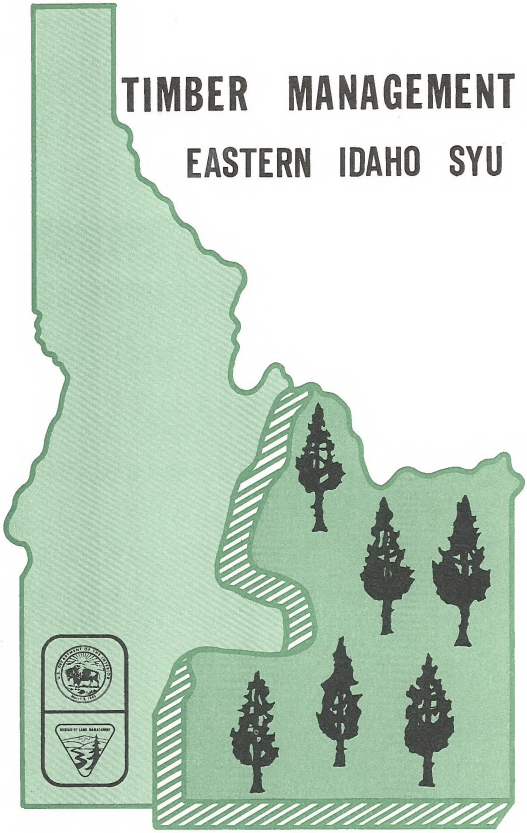
TIMBER MANAGEMENT

EASTERN IDAHO SYU



ENVIRONMENT ANALYSIS RECORD

DRAFT

DEPARTMENT OF THE INTERIOR

DRAFT

ENVIRONMENT ANALYSIS RECORD

EASTERN IDAHO SUSTAINED YIELD UNIT

TEN-YEAR TIMBER MANAGEMENT PROGRAM

Prepared by

BUREAU OF LAND MANAGEMENT

DEPARTMENT OF THE INTERIOR

Wm L Matthews

State Director, Idaho State Office

ENVIRONMENTAL ASSESSMENT RECORD
EASTERN IDAHO SUSTAINED YIELD UNIT TIMBER PROGRAM

TABLE OF CONTENTS

INTRODUCTION

The National Environmental Policy Act of 1969 directs all agencies to prepare a detailed environmental statement of all actions significantly affecting the quality of the human environment.

The total timber management program of the BLM was judged to have significant environmental impact. A draft Environmental Impact Statement for the Bureau's Timber Management Program was released in January, 1975, for public review. A final EIS was issued in September, 1976. Prior to the issuance of the final EIS, the Bureau became involved in a suit with the Natural Resources Defence Council (NRDC) concerning the Bureau's Timber Management Program. An agreement was reached with the NRDC which specified that (1) EIS's are to be written on the timber management plans for all Sustained Yield Units (SYU) in western Oregon, and (2) decisions for the need for EIS's on the timber management plans for sustained yield units outside of western Oregon will be made on the merits of each case.

The purpose of this Environmental Assessment Record (EAR) is TO DETERMINE IF THE PROPOSED TIMBER MANAGEMENT PROGRAM FOR THE EASTERN IDAHO SUSTAINED YIELD UNIT (SYU) IS A MAJOR FEDERAL ACTION CAUSING SIGNIFICANT ENVIRONMENTAL IMPACTS OR IF IT HAS A HIGH INTENSITY OF PUBLIC INTEREST, THEREBY REQUIRING AN ENVIRONMENTAL IMPACT STATEMENT. If an EIS is not necessary, the action will proceed based on the EAR.

This assessment of the eastern Idaho timber management program includes the application of silvicultural practices that would be used to implement the program, and the effects that can be expected from these practices on the environment.

A program type of assessment is not meant to preclude detailed analysis of silvicultural actions on a site specific basis. An environmental assessment will be prepared prior to a timber sale in a specific area.

CHAPTER 1

PROPOSED ACTION

The proposed action is the intensive management of an estimated 160,430 acres of commercial forest lands in the Salmon, Burley, Shoshone, and Idaho Falls Districts located within the eastern Idaho sustained yield inventory unit (SYU). Commercial forest lands are defined as lands having the capability of producing 20 cubic feet of tree growth per acre per year. In addition, there are 106,055 acres of noncommercial forest land producing less than 20 cubic feet of tree growth per acre per year.

The main objective of the forest management program is to produce the maximum value of raw materials from the commercial forest lands available for wood fiber production subject to the principles of sustained yield, multiple use, and environmental quality.

The multiple use objectives of these forest lands are as follows:

Range - Maintain livestock forage in those forested areas where use occurs.

Watershed - Provide vegetative cover for the prevention of rapid runoff, prevention of soil erosion, and provision of quality water in streams on/or adjacent to BLM lands.

Fisheries - Maintain or improve the water quality and fish habitat in streams within and adjacent to timbered lands administered by the BLM.

General Recreation - Provide quality recreation experiences through dispersed opportunities for the forest visitor.

Wildlife - Manage the timber using silvicultural practices and considerations which (1) protect vital or critical habitat areas or components as necessary, (2) have the least long-term adverse impacts, and (3) have the greatest potential for wildlife habitat enhancement on either a species basis or wildlife in general.

Cultural - Preserve sites where historic or prehistoric features occur for the use of all people and secure the maximum potential use from them for scientific, educational recreational or other public purposes.

Aesthetics - Manage visual resources to meet appropriate visual resource classes and maintain the character of the landscape.

Economic - Provide raw materials to stimulate the local economy by keeping small woods operations in business.

The means to meeting these multiple use objectives through the forest management program will be discussed in the planning phase of this chapter.

The 1976 forest inventory for the eastern Idaho sustained yield unit shows that the allowable cut per decade is 38 million board feet (MMBF), or an average of 3.8 MMBF per year - Scribner log rule.

To produce this volume, approximately 4,254 acres will be harvested and 7,000 acres thinned based on a computerized forest management model. Also included as part of the forest model are 800 acres of reforestation to be completed during the present decade.

Beginning in fiscal year 1979, the decadal harvest of 38 MMBF will be allocated to the four BLM districts involved based upon their proportion of intensive management area and the capability of personnel to prepare timber for sale. Due to staffing shortages, it is anticipated that the entire annual cut will not be offered for sale annually for two to three years hence. The forest management goal is to accomplish the intensive management practices and annual harvest indicated above.

The following series of maps show the location of commercial and noncommercial forest lands and the proposed management categories within the commercial forest lands. Each map contains a legend depicting the three categories: intensive management areas, special treatment areas, and deferred areas.

Intensive management areas are those that are included in the allowable cut computation that indicated the sustained level of harvest to be 38 MMBF per decade. As can be seen from the maps, most of these intensive management areas are located in the Salmon District.

Special treatment areas require special logging techniques such as helicopter yarding presently being used on Forest Service timber

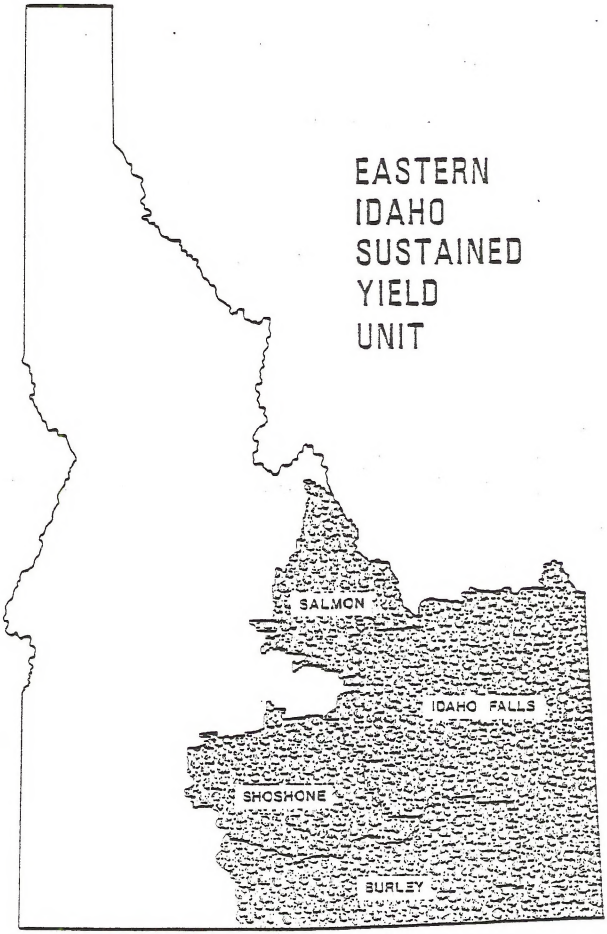
sales. The allowable cut computations do not include these areas because the special techniques involved are not well established within this area of Idaho. When economics permit the use of helicopters on scattered tracts of low volume timber lands, these areas will be included in the allowable cut calculations.

Deferred areas are timber lands that are too frail for logging or are involved in special use areas such as the Baldy Mountain area near Ketchum.

Noncommercial forest lands are not considered in the allowable cut computation because of their low productivity. In the event a situation becomes critical in these areas such as a problem with insects, disease, or fire, etc., salvage logging practices may be implemented. Timber volumes harvested in this manner will not be included as part of the annual cut commitment.

The timber management program will be implemented in four stages: (1) inventory and planning analysis, (2) harvest, (3) development, and (4) protection.

MAP SECTION


EASTERN
IDAHO
SUSTAINED
YIELD
UNIT
SALMON
IDAHO FALLS
SHOSHONE
BURLEY

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

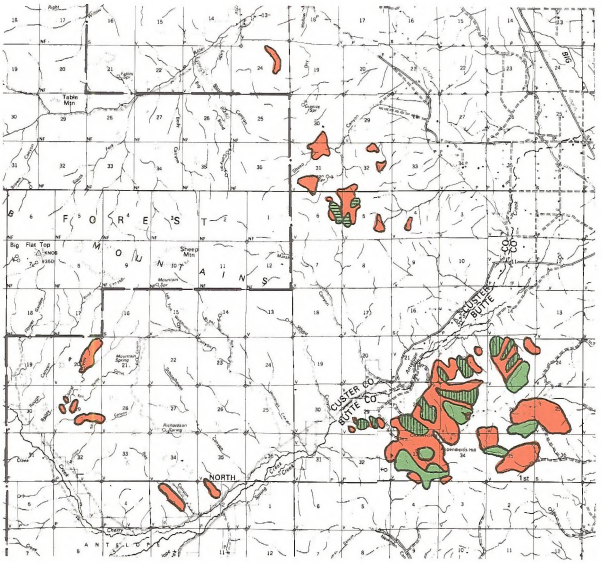
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.24 E. R.25 E.

T 6 N

T 5 N



1 0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

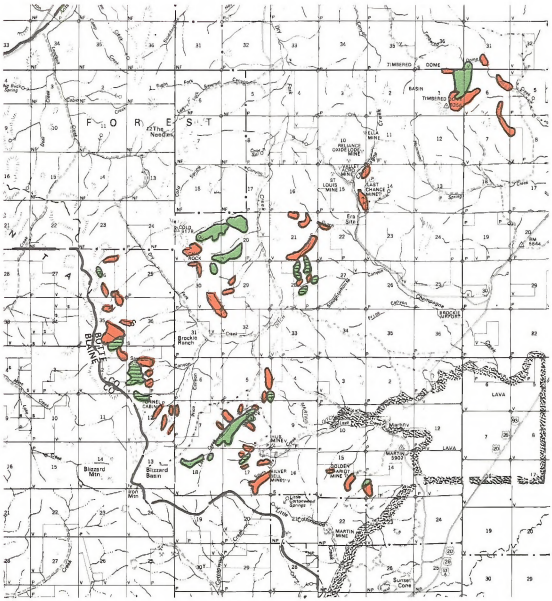
LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 23 E.

R. 24 E.



1 0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

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- INTENSIVE TIMBER MANAGEMENT AREA
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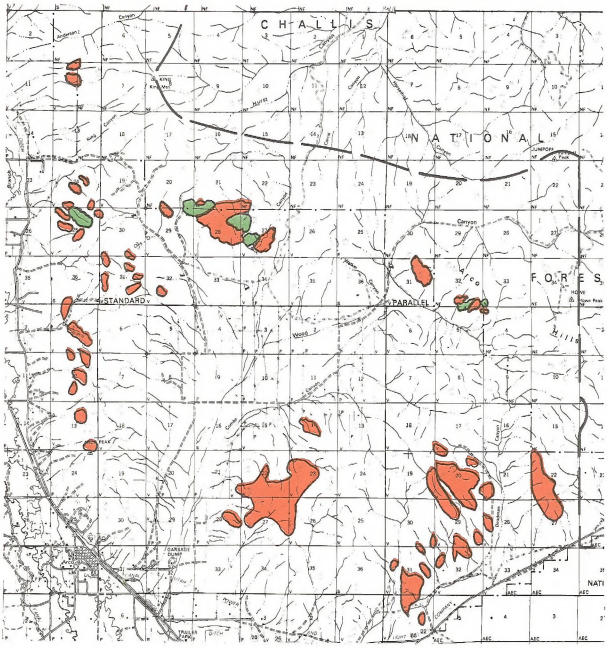
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.27E. R.28E.



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Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
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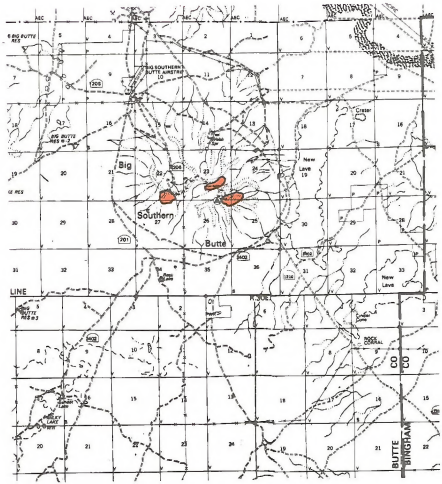
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 29 E. R. 30 E.



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1 0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO SUSTAINED YIELD UNIT 1978

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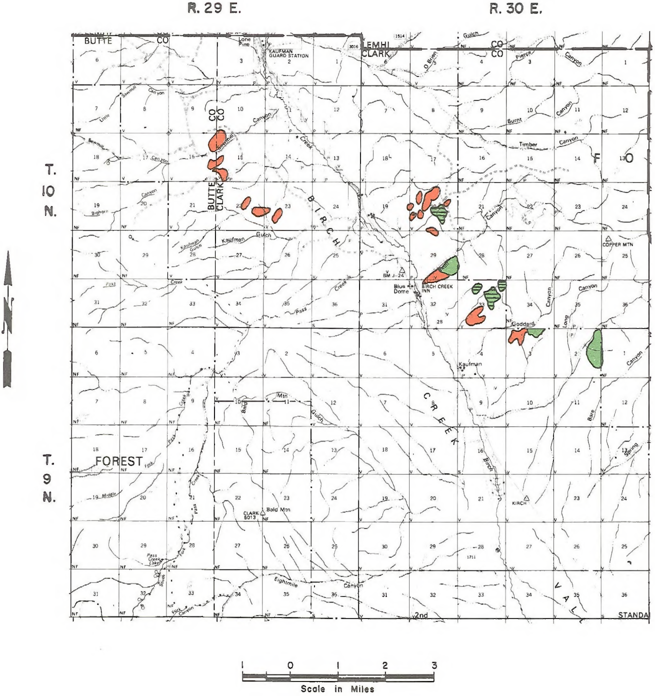
BLM NON-COMMERCIAL FOREST LAND



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EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

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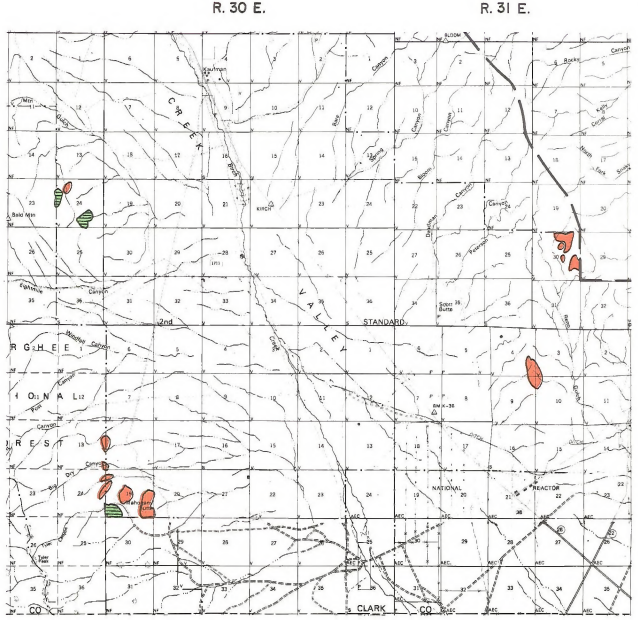

Scale in Miles
0 1 2 3

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EASTERN IDAHO
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LEGEND

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- DEFERRED AREA

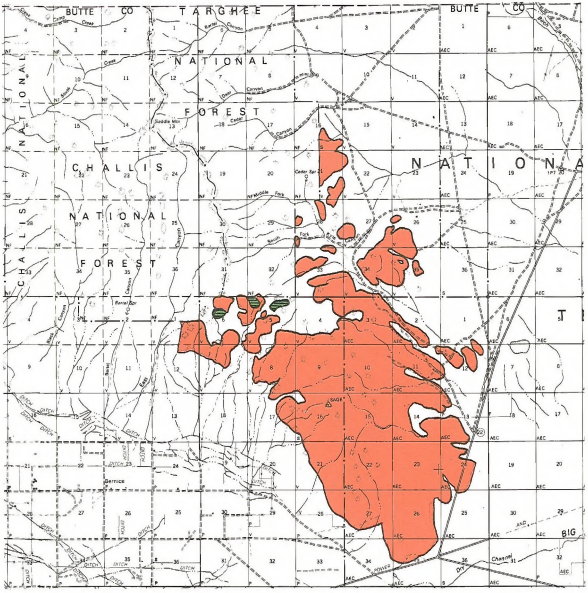
BLM NON-COMMERCIAL FOREST LAND

R. 29 E.

R. 30 E.

T. 7 N.

T. 6 N.



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0 1 2 3 4 5
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

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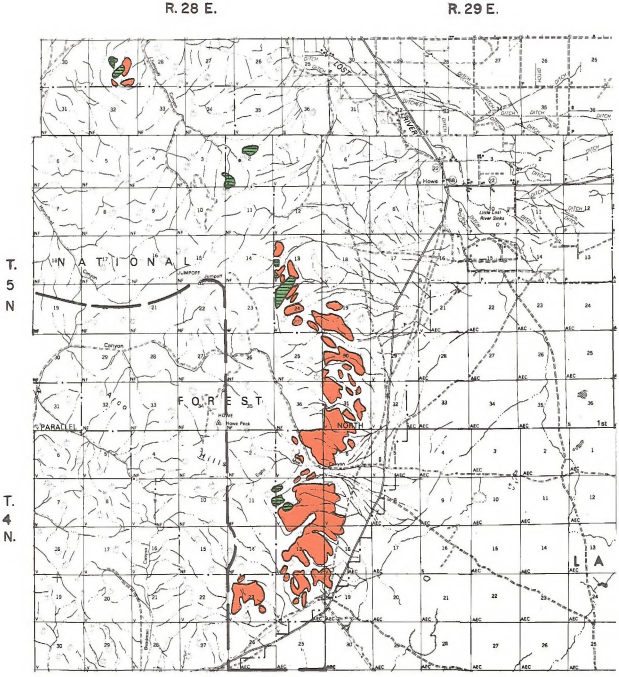

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EASTERN IDAHO
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LEGEND

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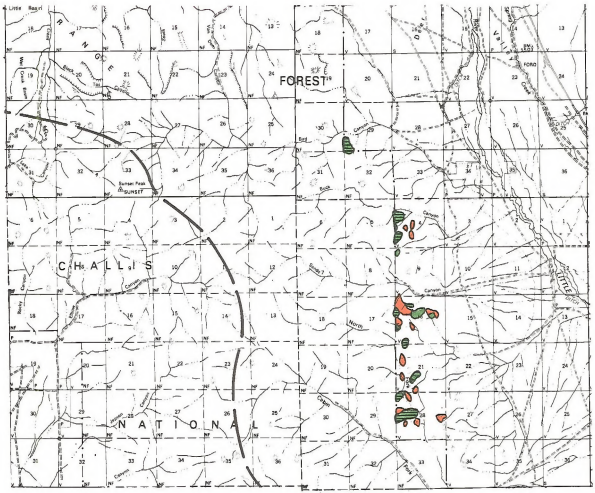
BLM NON-COMMERCIAL FOREST LAND

R. 26 E.

R. 27 E.

T. 8 N.

T. 7 N.



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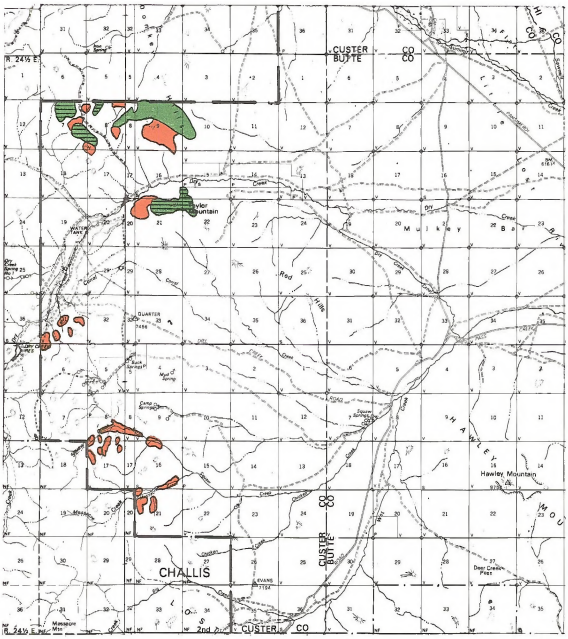
BLM NON-COMMERCIAL FOREST LAND

R. 25 E.

R. 26 E.

T. 10 N.

T. 9 N.



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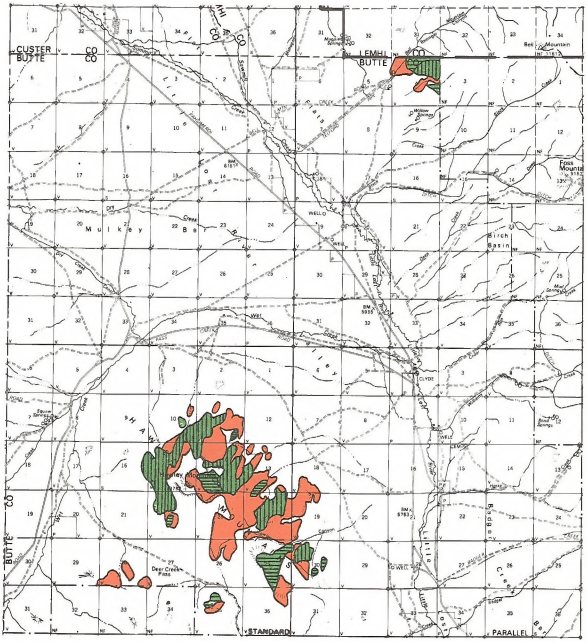

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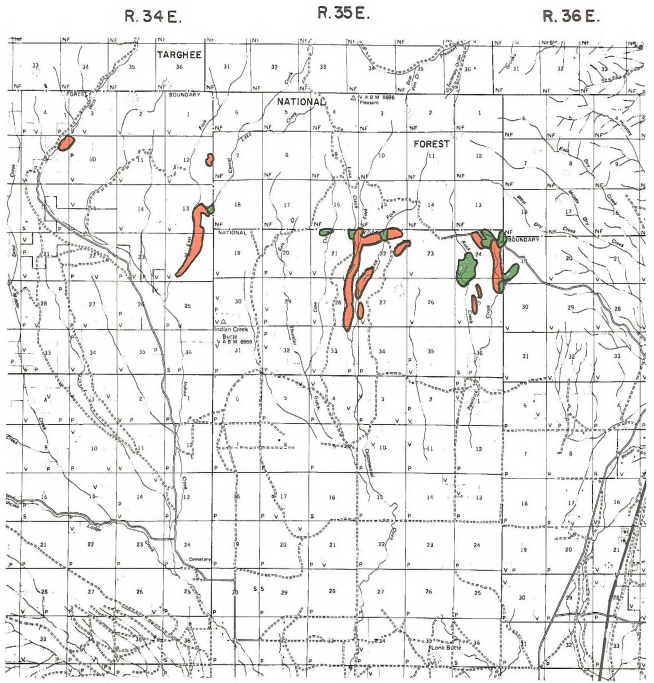

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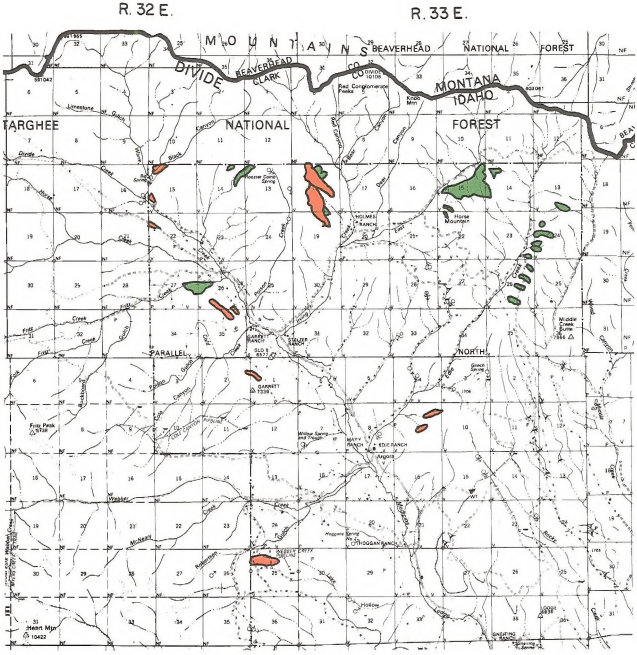

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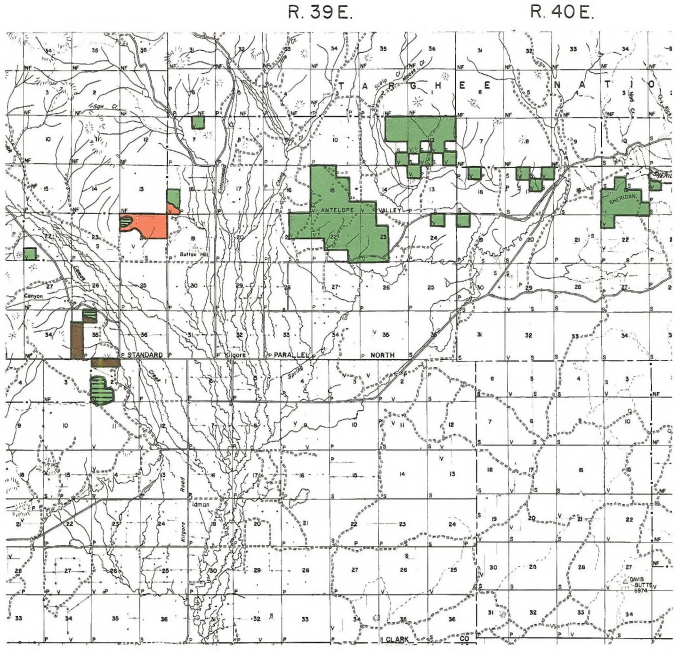

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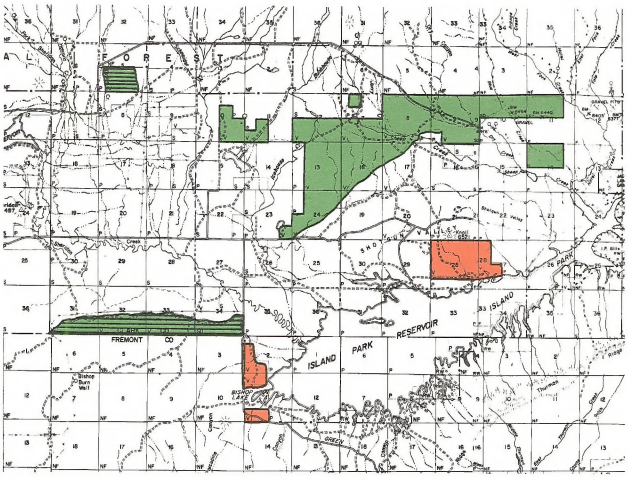

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BLM NON-COMMERCIAL FOREST LAND

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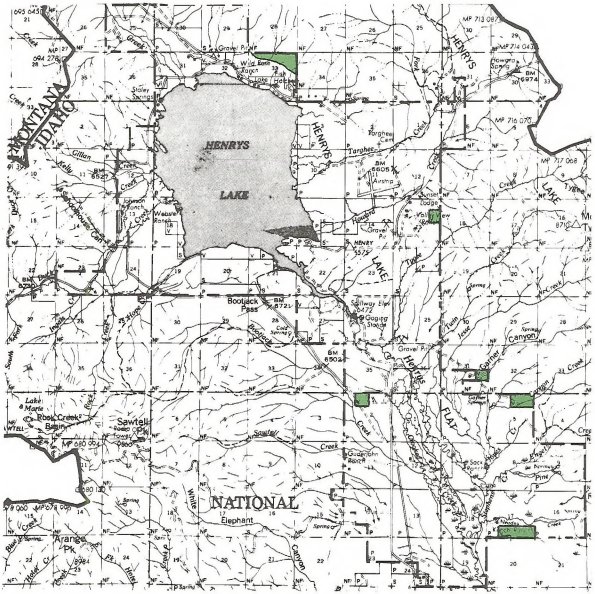

T. 15 N.

T. 14 N.

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO SUSTAINED YIELD UNIT 1978

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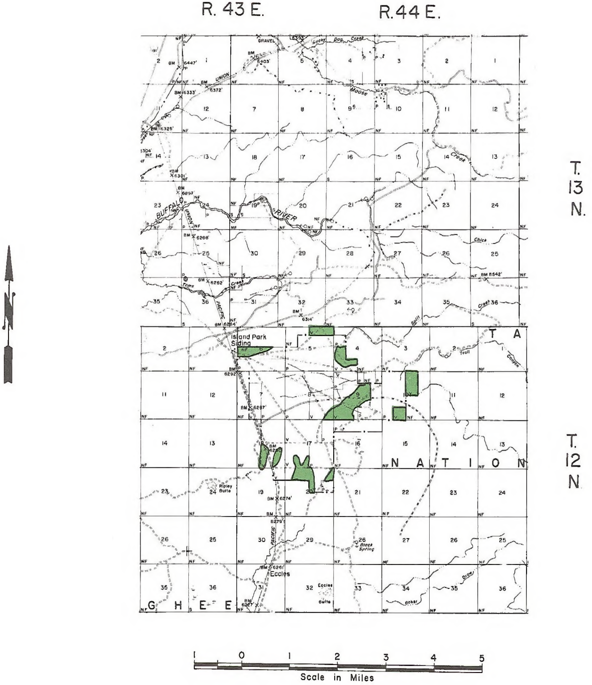

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EASTERN IDAHO
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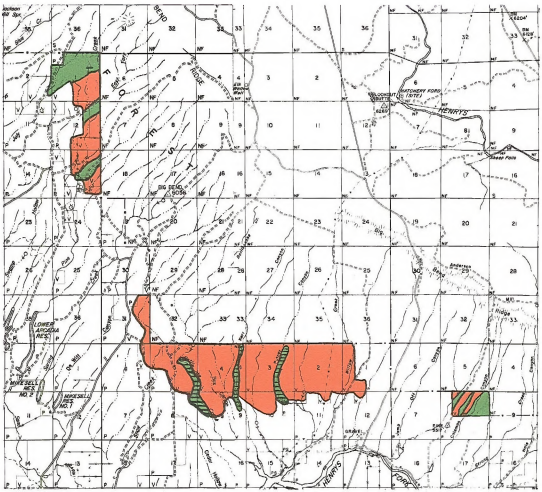
BLM NON-COMMERCIAL FOREST LAND

R. 41 E. R. 42 E. R. 43 E.



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EASTERN IDAHO
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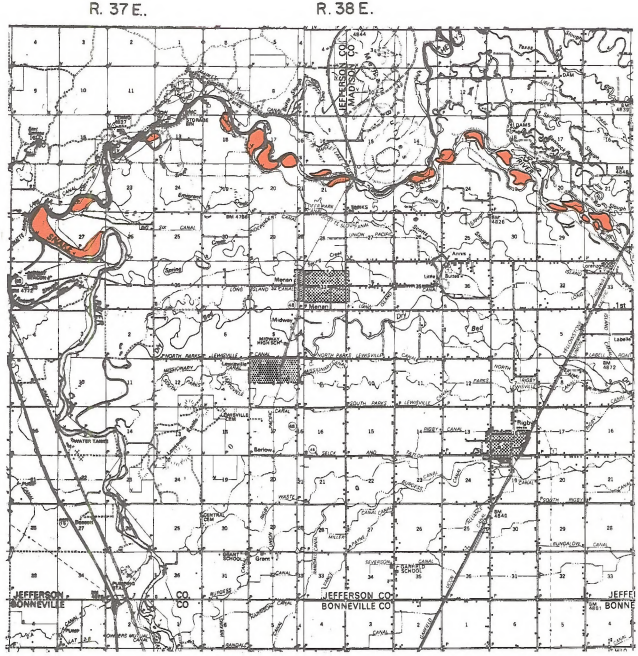

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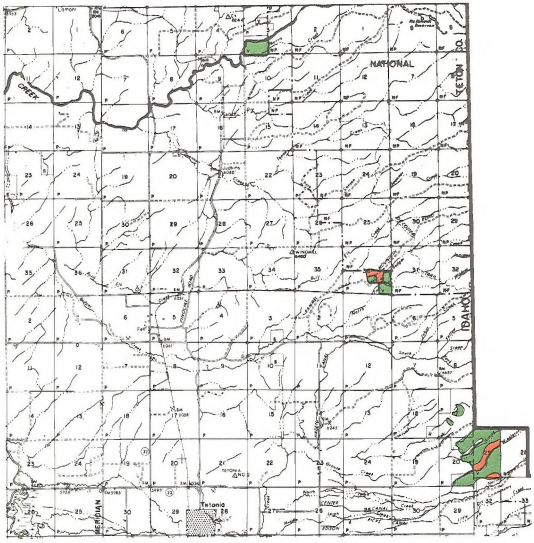
T. 7 N.

T. 6 N.



Scale in Miles

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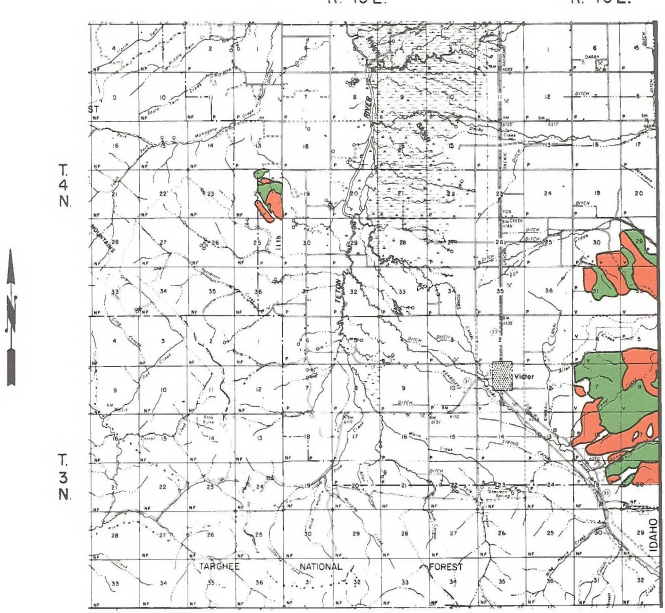

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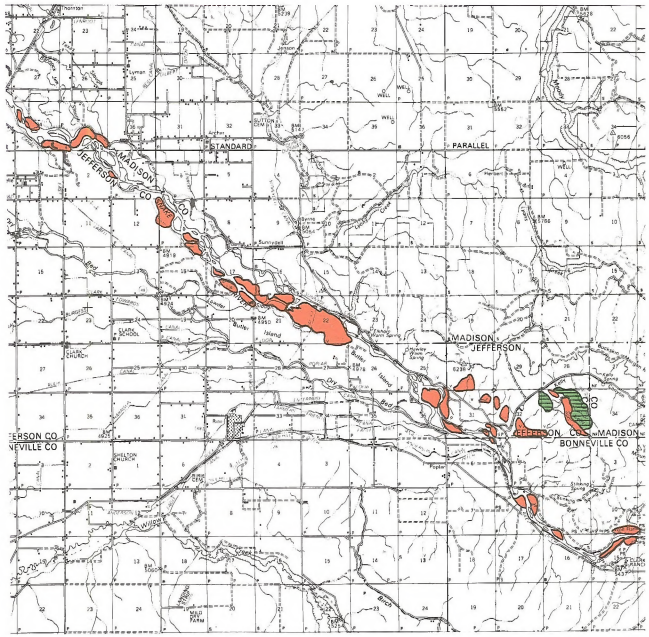

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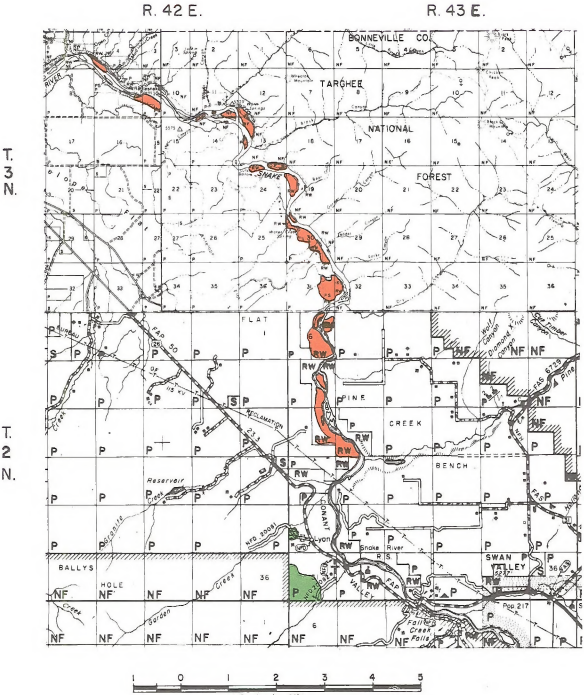

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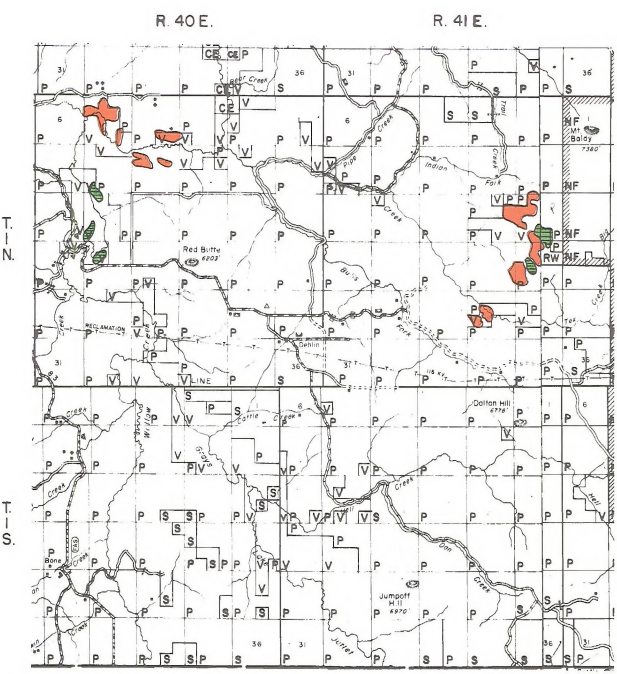


Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1976

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

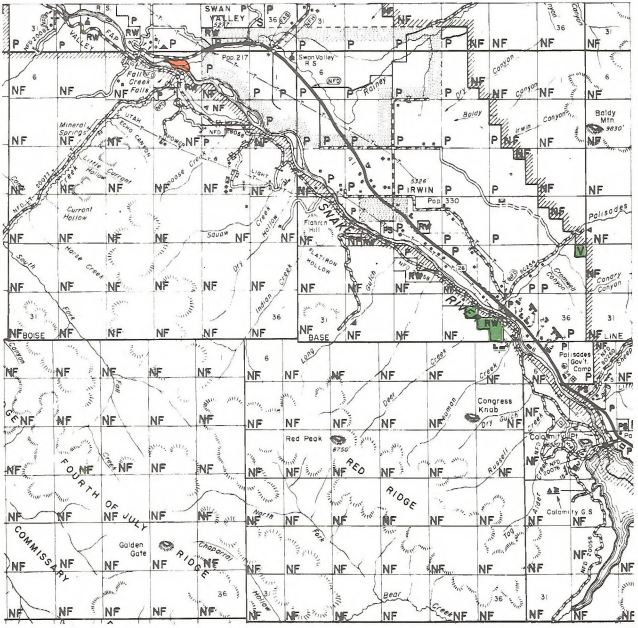
BLM NON-COMMERCIAL FOREST LAND

R. 43 E.

R. 44 E.

T. 1 N.

T. 1 S.



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LEGEND

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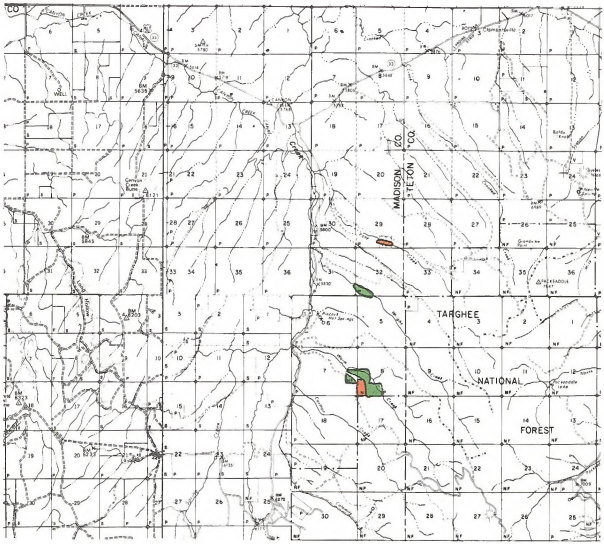
BLM NON-COMMERCIAL FOREST LAND

R. 42 E.

R. 43 E.

T. 6 N.

T. 5 N.



Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

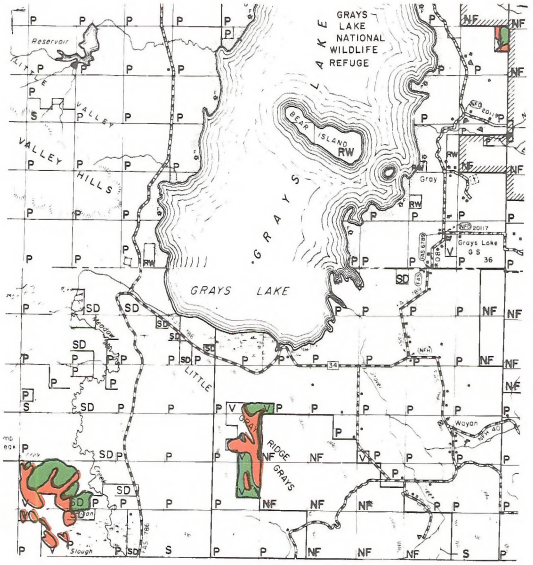
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.43E.

T. 4 S.

T. 5 S.



Scale in Miles

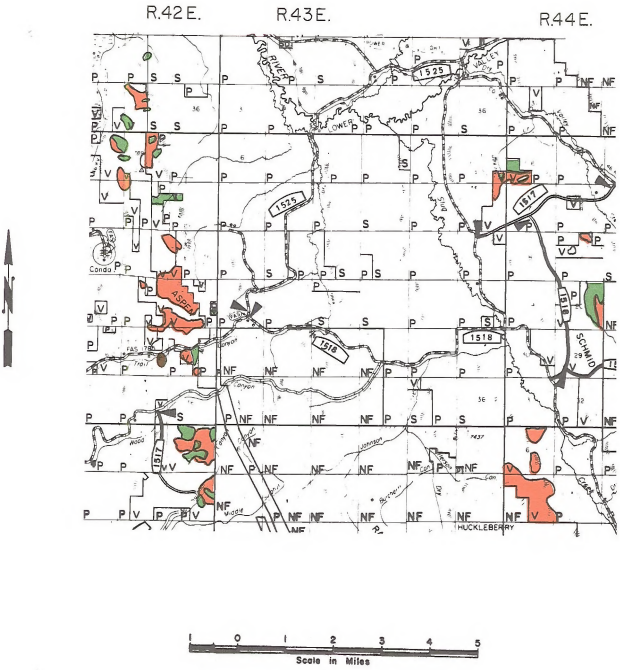
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

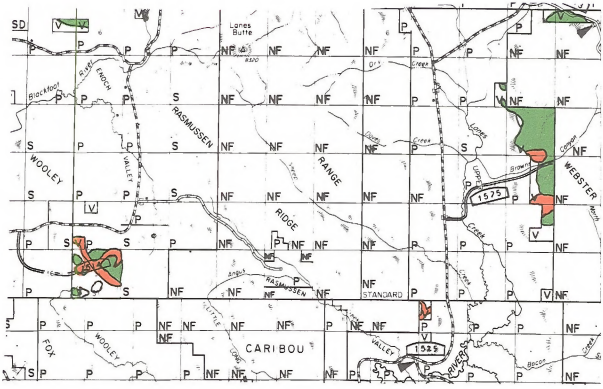
LEGEND

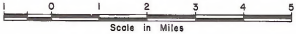
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.43E. R.44E.

T 6 S





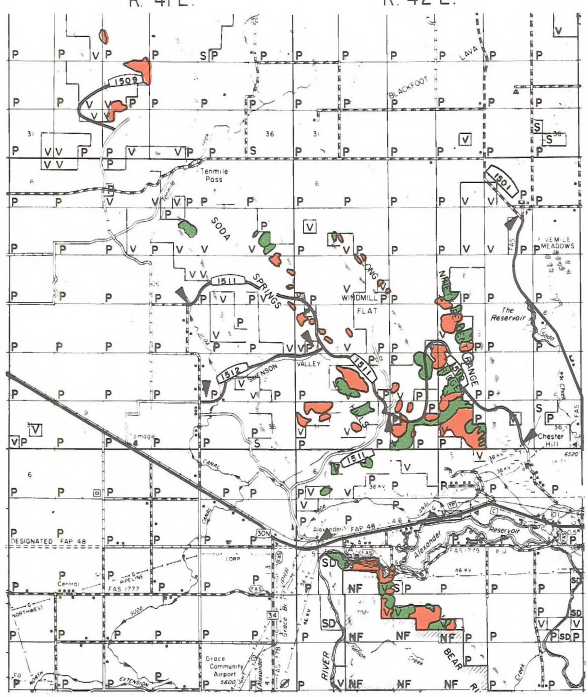
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



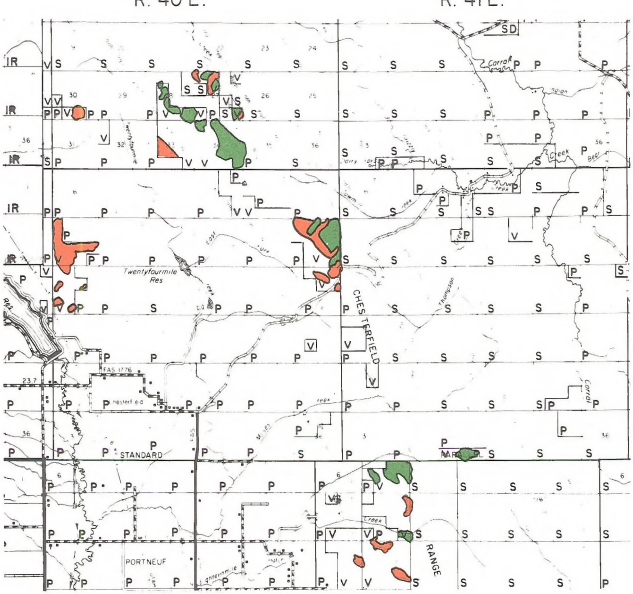
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



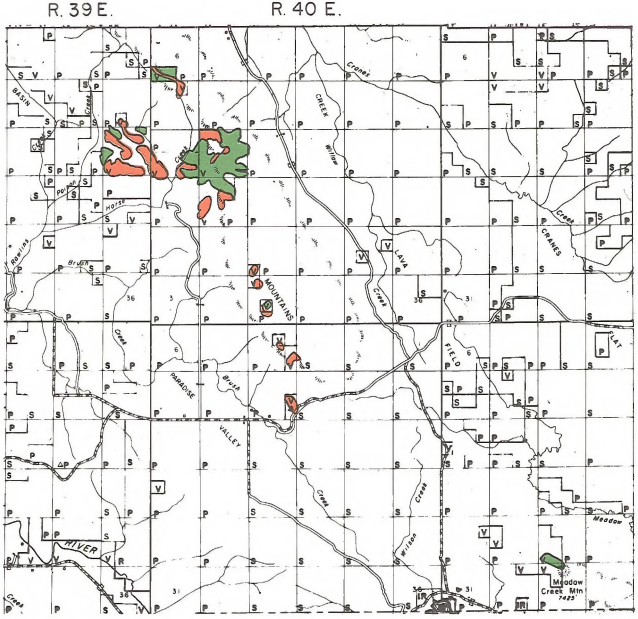
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA
- BLM NON-COMMERCIAL FOREST LAND



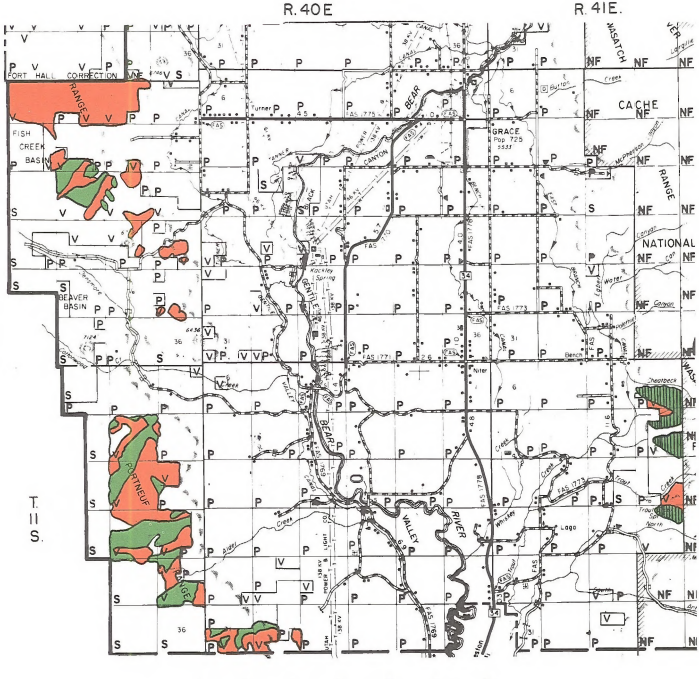
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



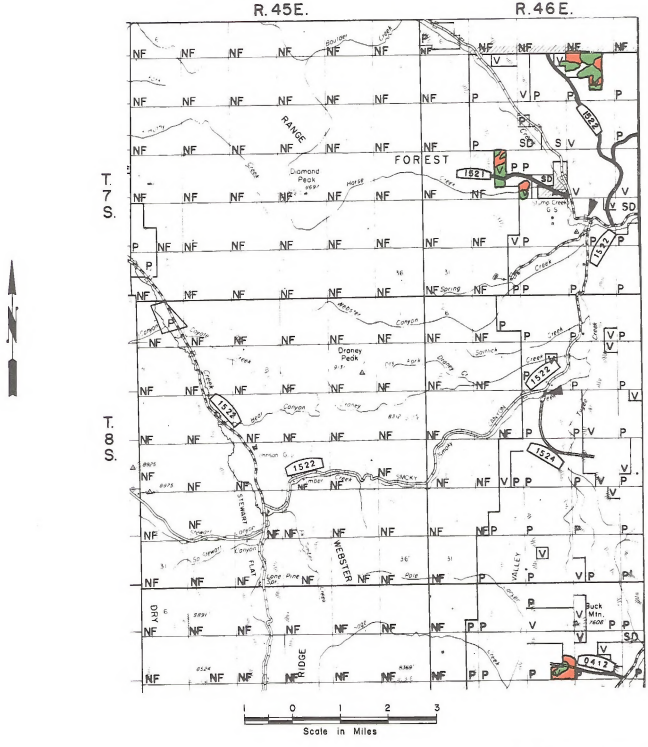
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

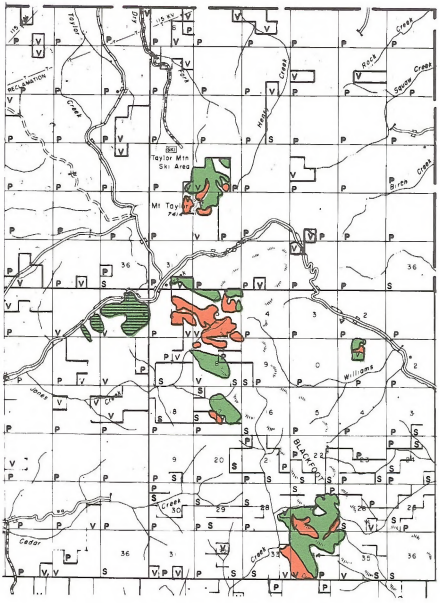
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 39 E.

T. 1 S.

T. 2 S.

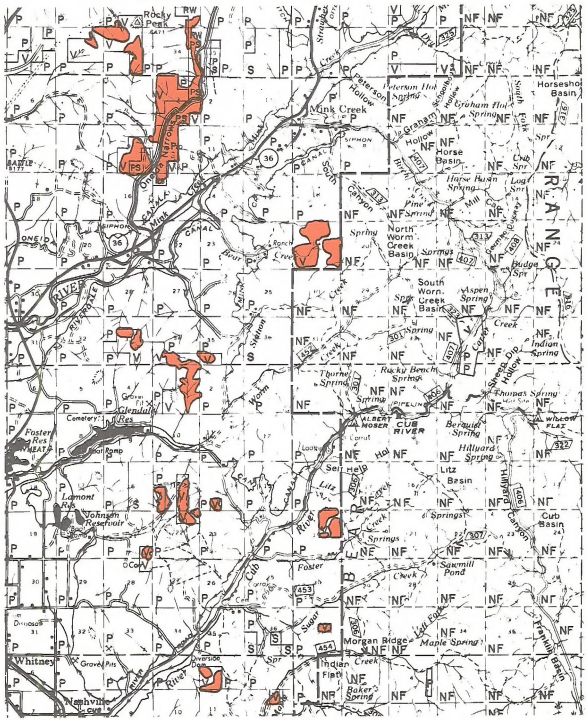


U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA
- BLM NON-COMMERCIAL FOREST LAND

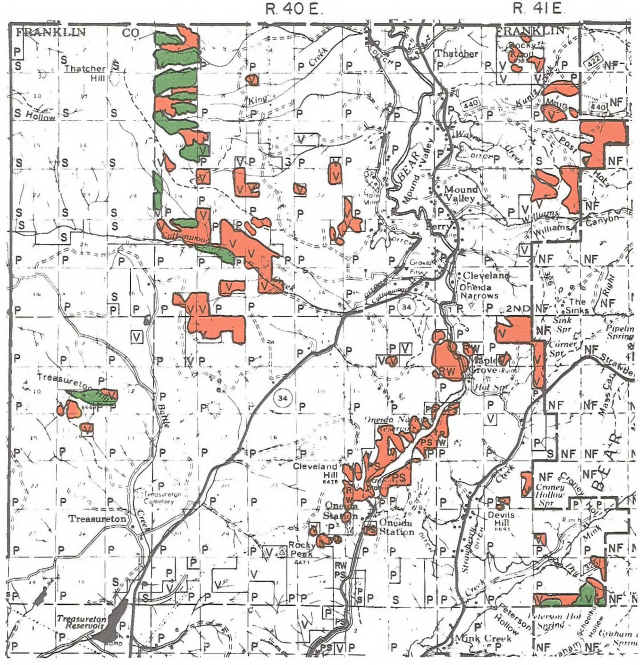


U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA
- BLM NON-COMMERCIAL FOREST LAND

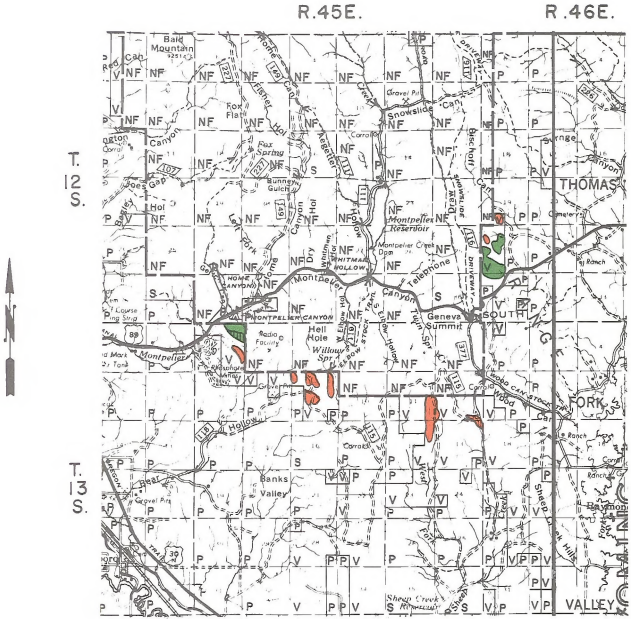


U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA
- BLM NON-COMMERCIAL FOREST LAND



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

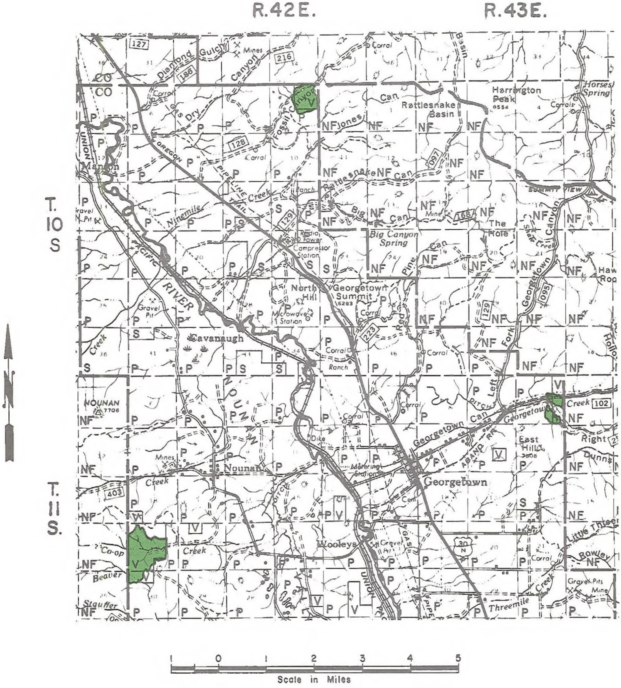
EASTERN IDAHO SUSTAINED YIELD UNIT 1978

LEGEND

BLM COMMERCIAL FOREST LAND

- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

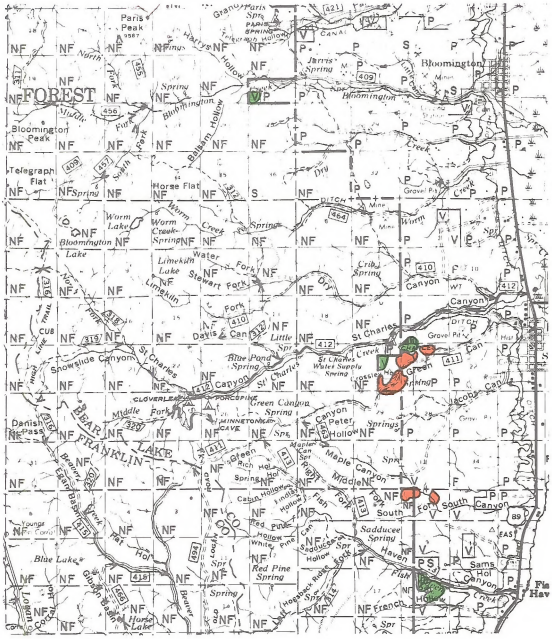
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.42E. R.43E.

T. 15 S.

T. 16 S.



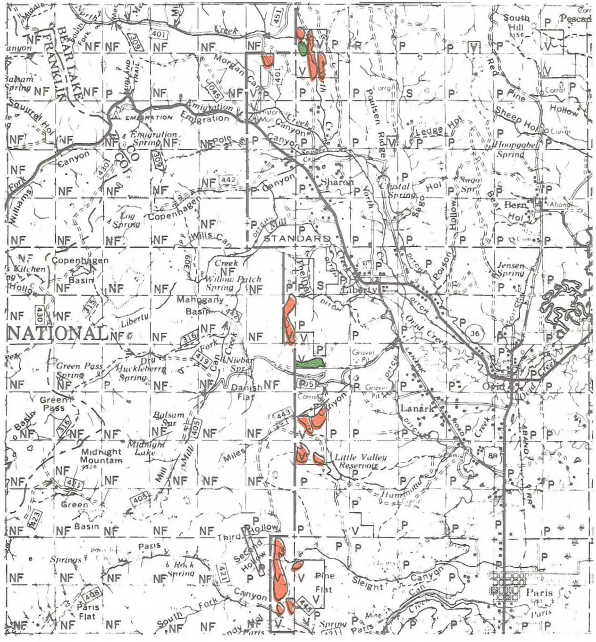
0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA
- BLM NON-COMMERCIAL FOREST LAND



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

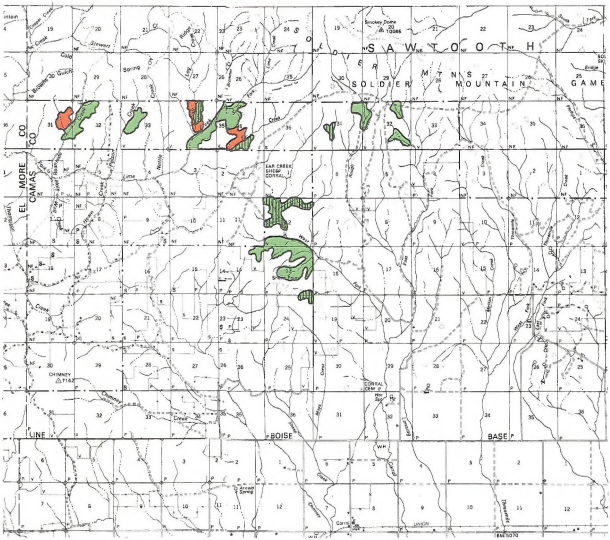
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.12E. R.13E.

T. 2 N.

T. 1 N.



0 1 2 3 4 5
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

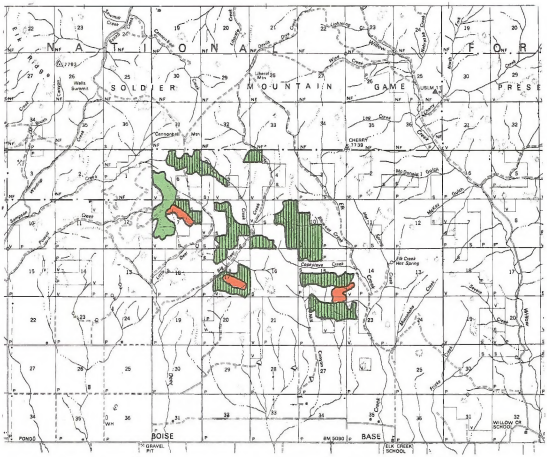
BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 15 E.

T. 2 N.

T. 1 N.



1 0 1 2 3 4 5
Scale in Miles

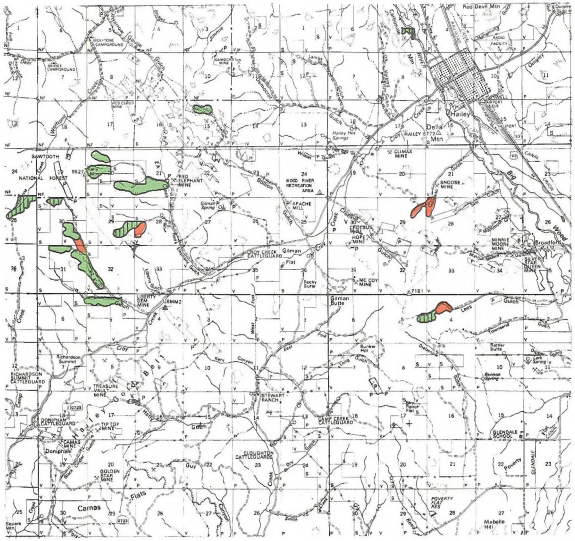
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



T. 2 N.

T. 1 N.

R.17 E.

R.18 E.

0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

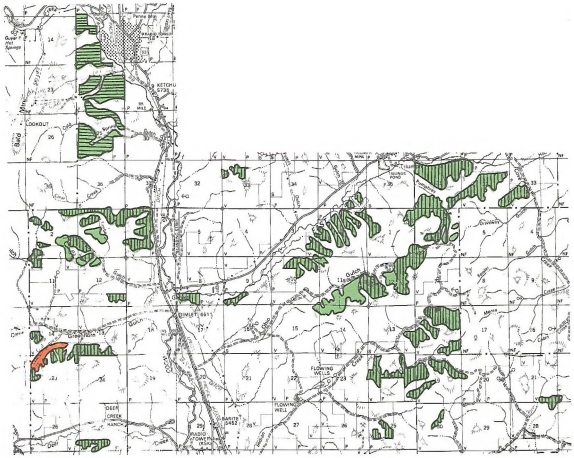
EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R.18E. R.19E.



1 0 1 2 3
Scale in Miles

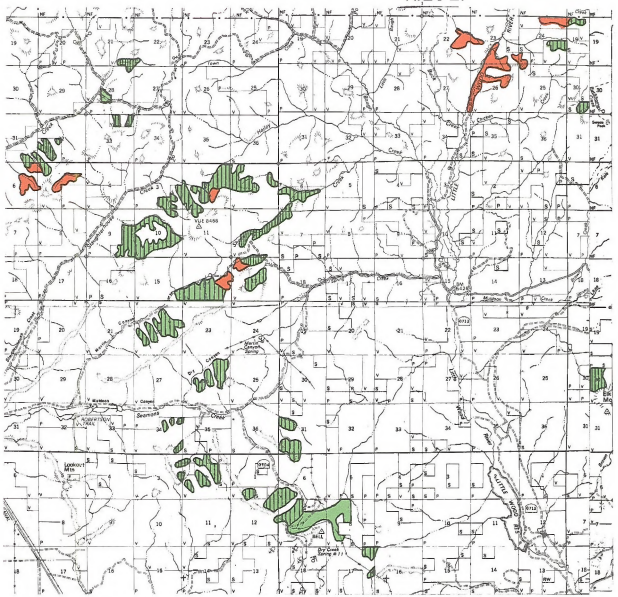
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



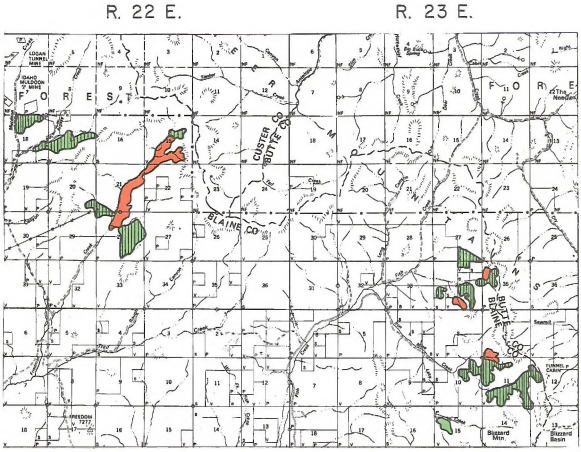
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



Scale in Miles
0 1 2 3

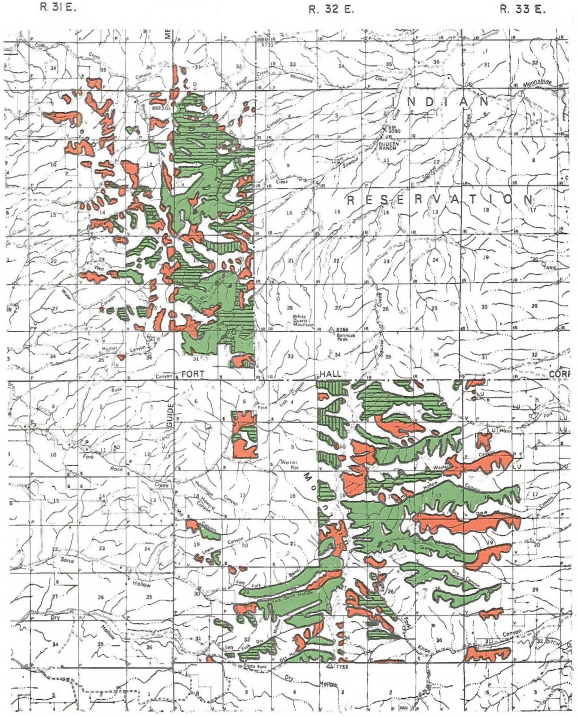
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



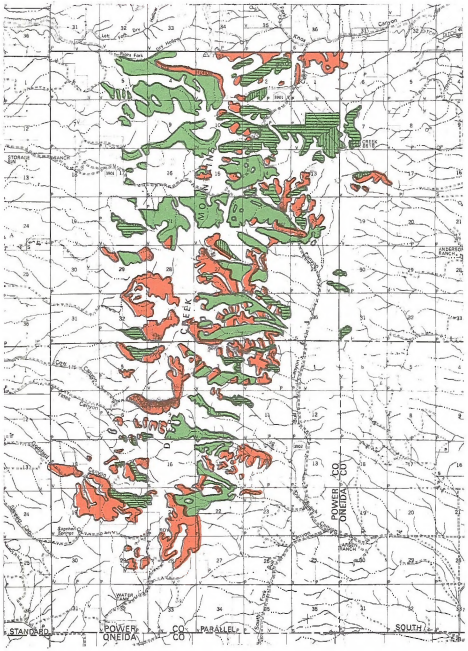
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

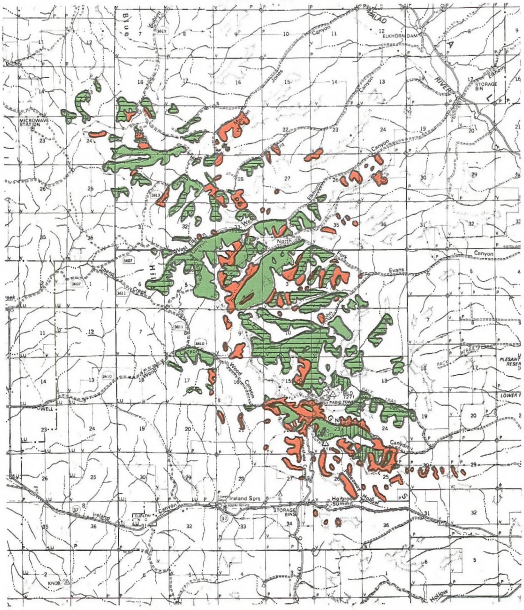
EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

1 0 1 2 3 4 5
Scale in Miles



T. 13 S.

T. 14 S.

R. 33 E. R. 34 E. R. 35 E.

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

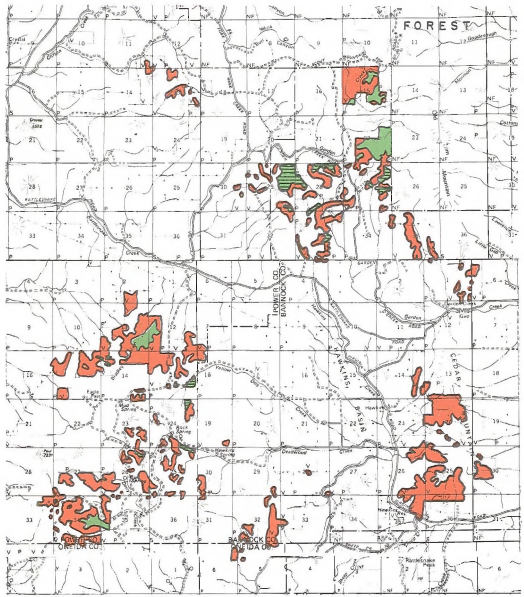
LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 34 E.

R. 35 E.



Scale in Miles

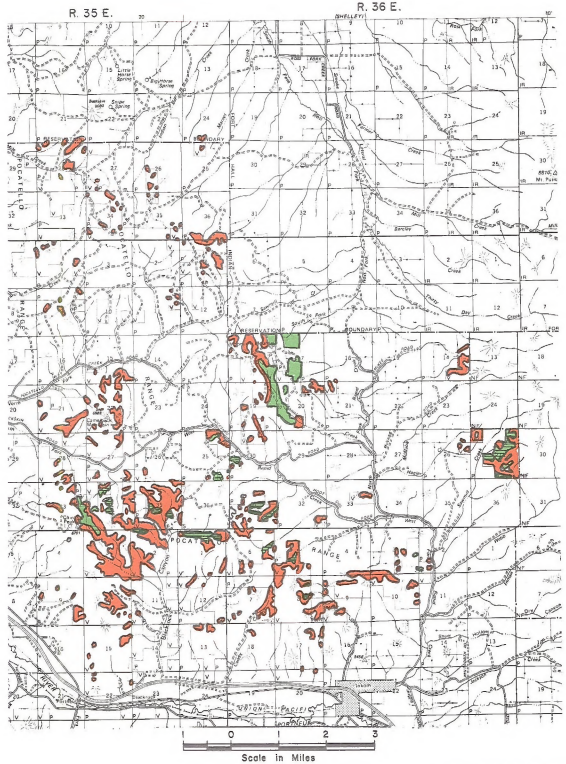
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



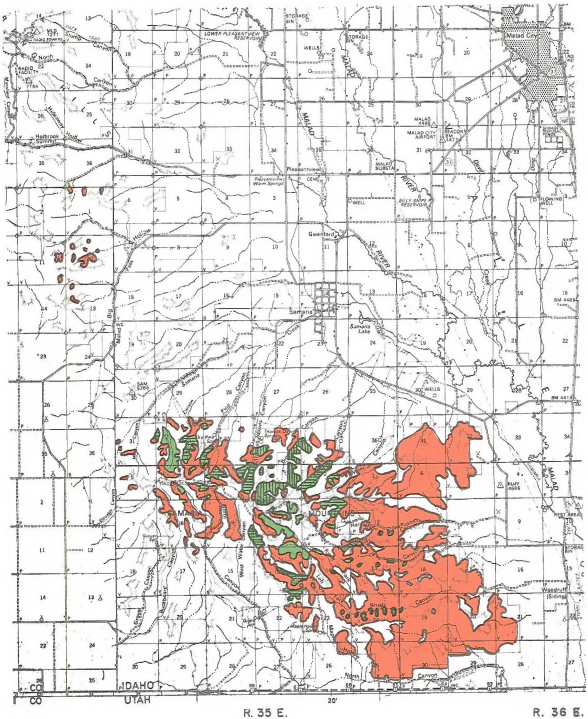
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



Scale in Miles

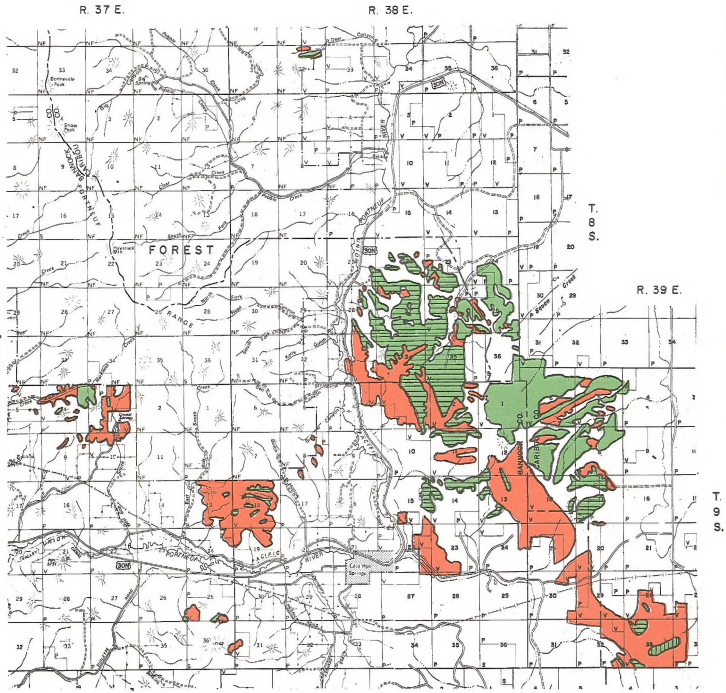
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1976

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



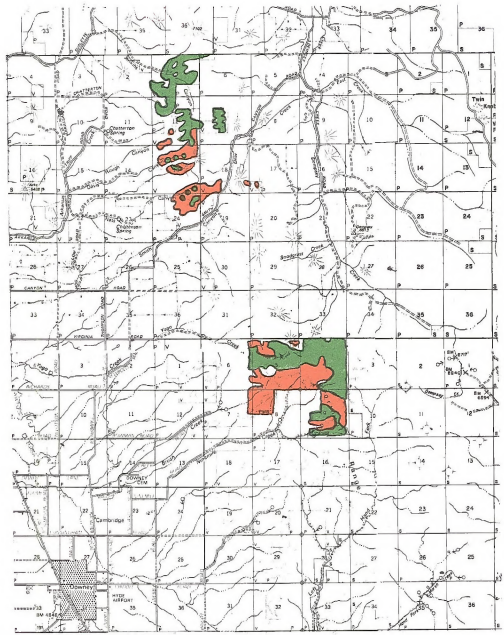
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



Burley District Sheet 8 of 8

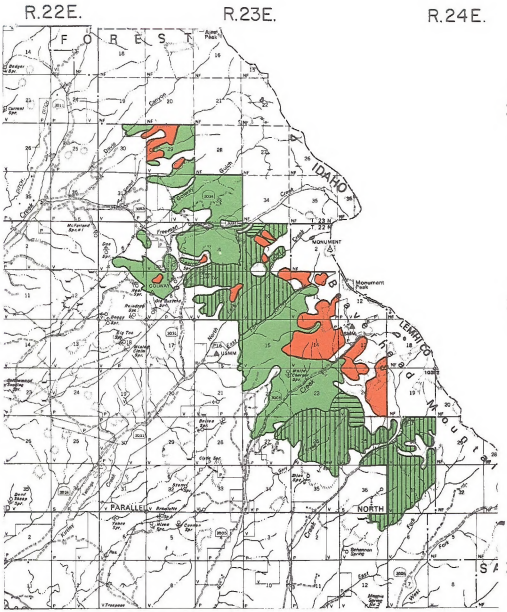
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO SUSTAINED YIELD UNIT 1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



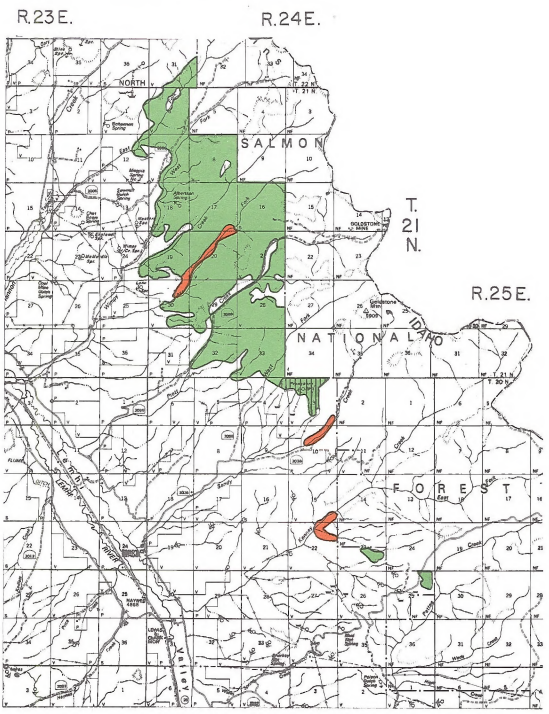
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



N

0 1 2 3 4 5
Scale in Miles

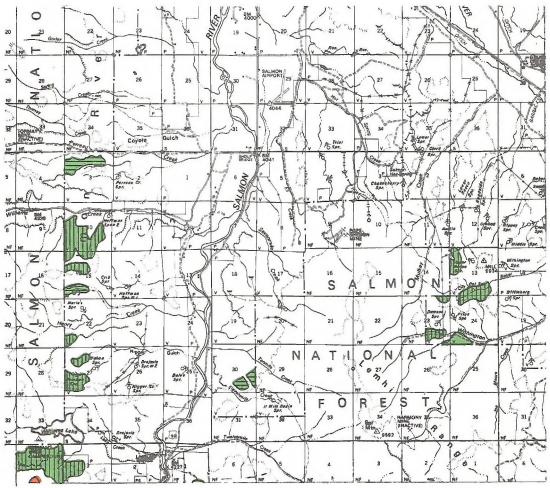
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



0 1 2 3 4 5
Scale in Miles

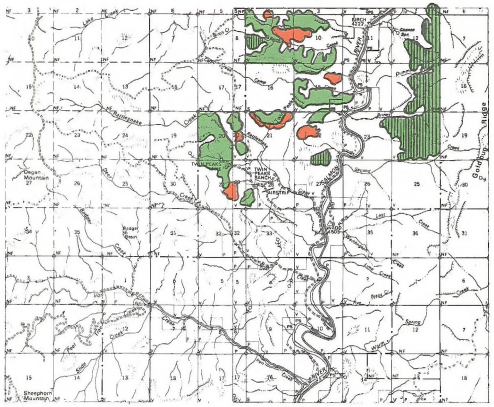
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



T. 19 N.

T. 18 N.

R. 20 E.

R. 21 E.

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Scale in Miles

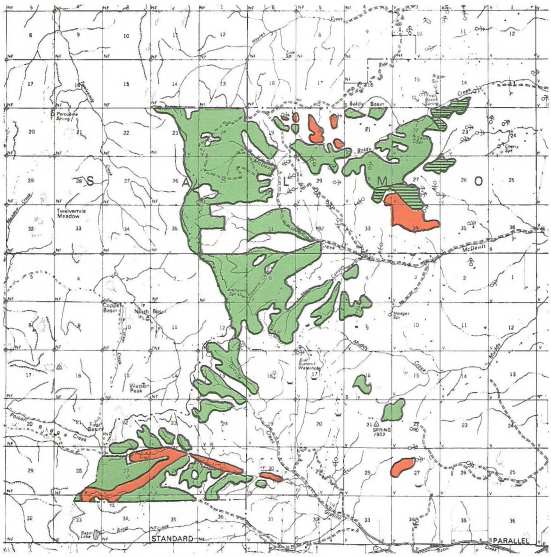
U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND



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R. 22 E.

R. 23 E.

Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

EASTERN IDAHO
SUSTAINED YIELD UNIT
1978

LEGEND

BLM COMMERCIAL FOREST LAND
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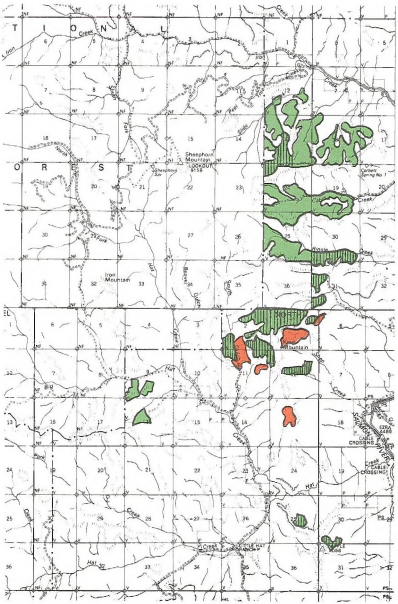
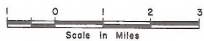
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND





U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
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1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 24 E.

R. 25 E.

T. 19 N.

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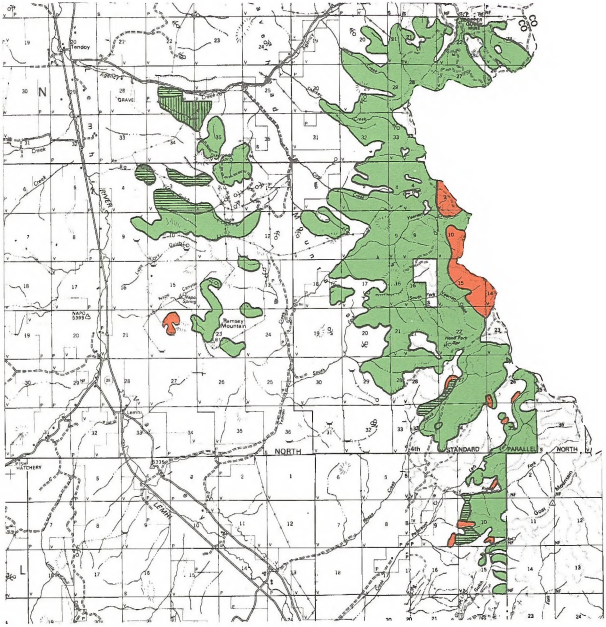
T. 17 N.



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Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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1978

LEGEND

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- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

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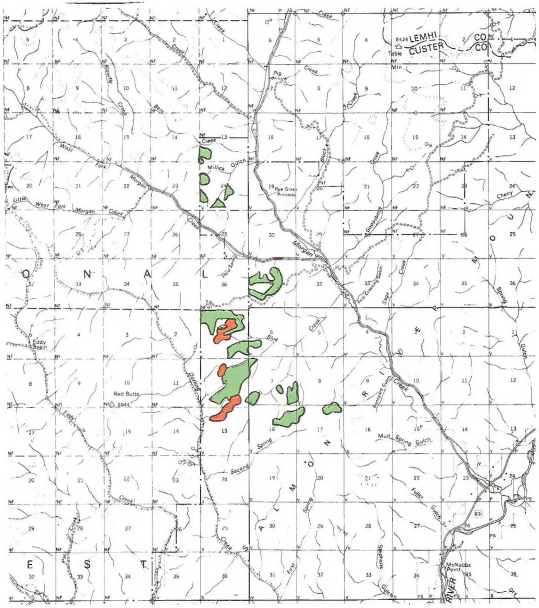

Scale in Miles

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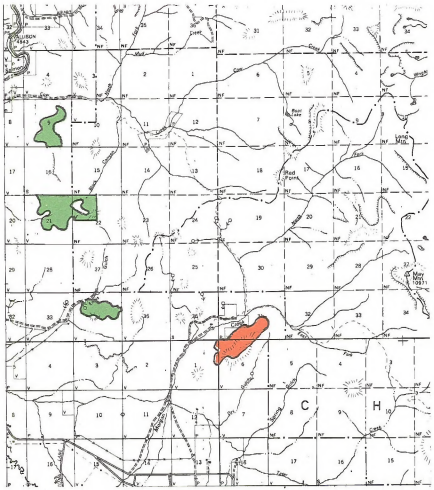

Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
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1978

LEGEND

BLM COMMERCIAL FOREST LAND
- INTENSIVE TIMBER MANAGEMENT AREA
- SPECIAL TREATMENT AREA
- DEFERRED AREA

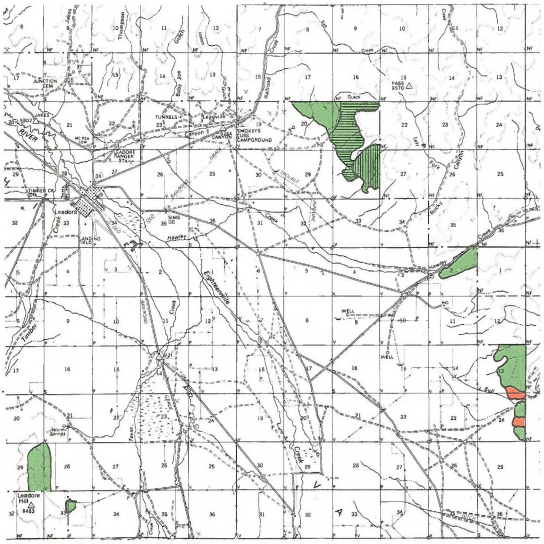
BLM NON-COMMERCIAL FOREST LAND

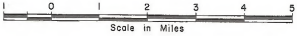
R. 26 E.

R. 27 E.

T. 16 N.

T. 15 N.





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1978

LEGEND

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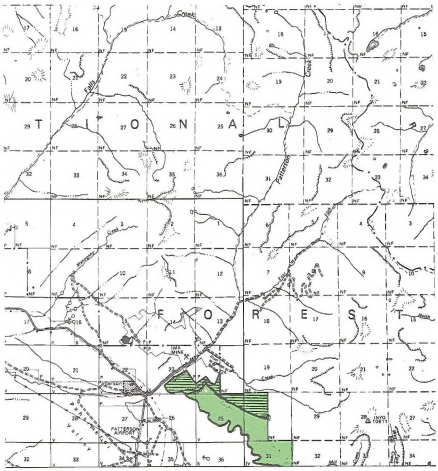

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LEGEND

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- SPECIAL TREATMENT AREA
- DEFERRED AREA

BLM NON-COMMERCIAL FOREST LAND

R. 28 E. R. 29 E.

T. 15 N.

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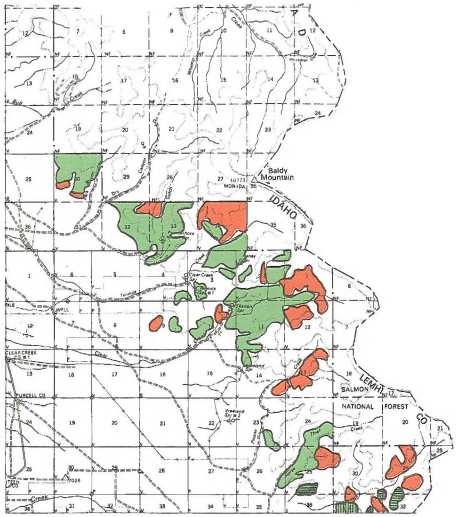

Scale in Miles
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U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO SUSTAINED YIELD UNIT 1978

LEGEND

BLM COMMERCIAL FOREST LAND
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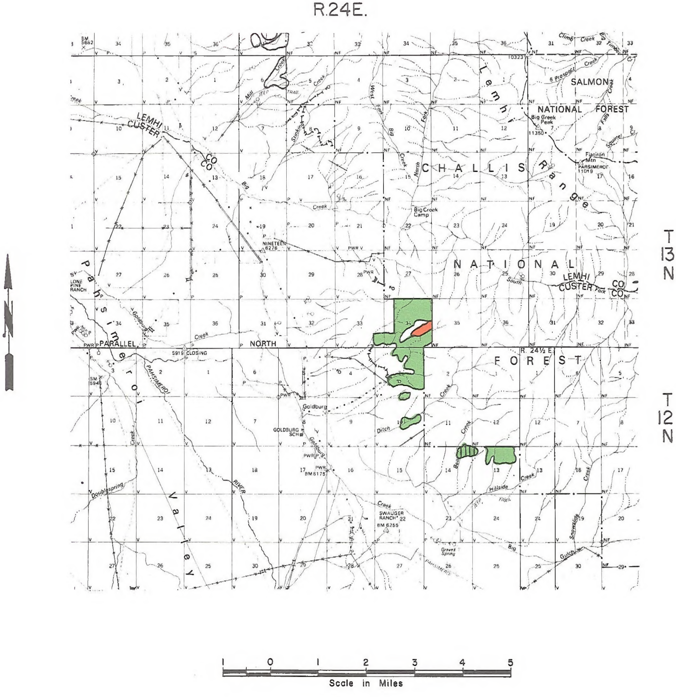

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BLM NON-COMMERCIAL FOREST LAND

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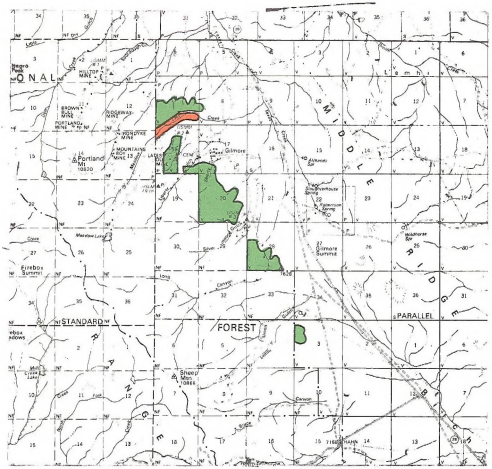

T. 13 N.

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Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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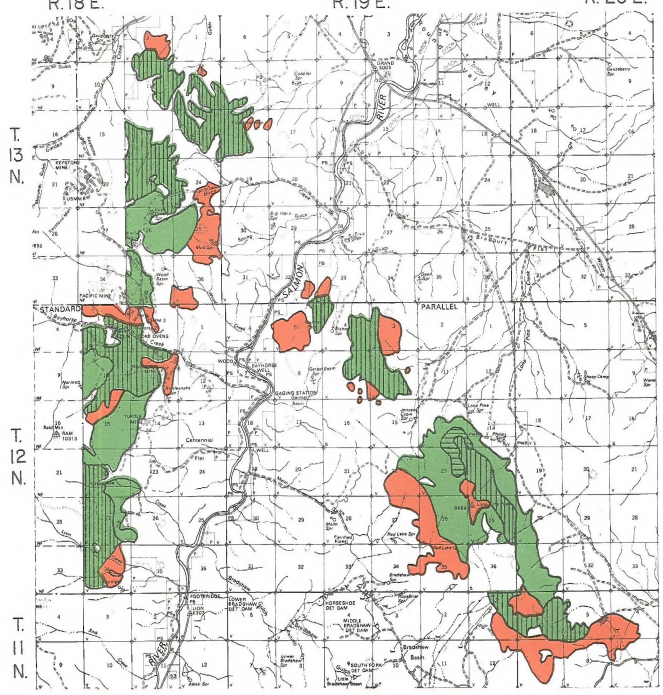

U. S. DEPARTMENT OF THE INTERIOR
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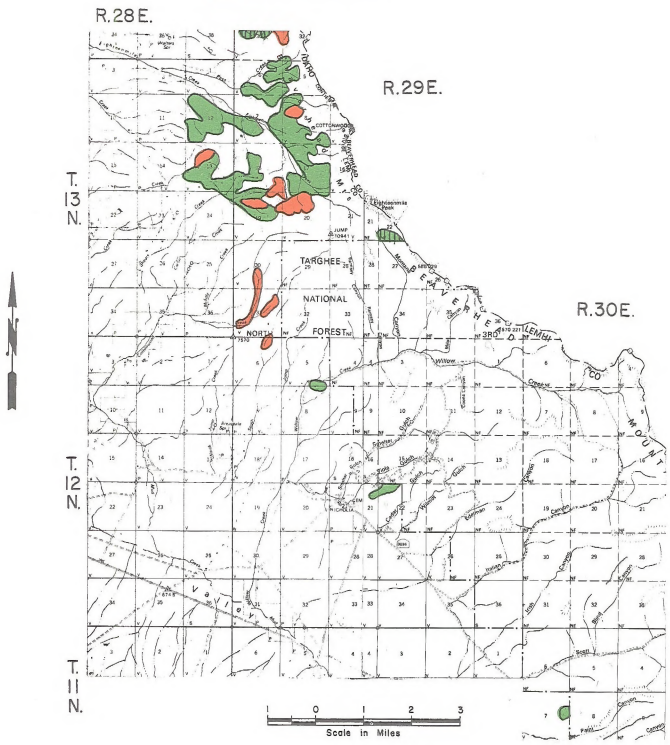

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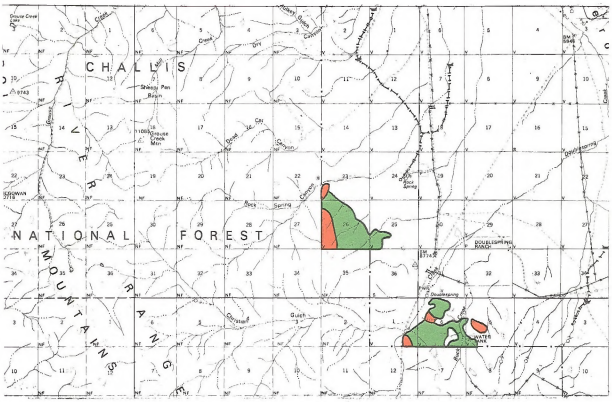
BLM NON-COMMERCIAL FOREST LAND

R. 22 E. R. 23 E



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Scale in Miles

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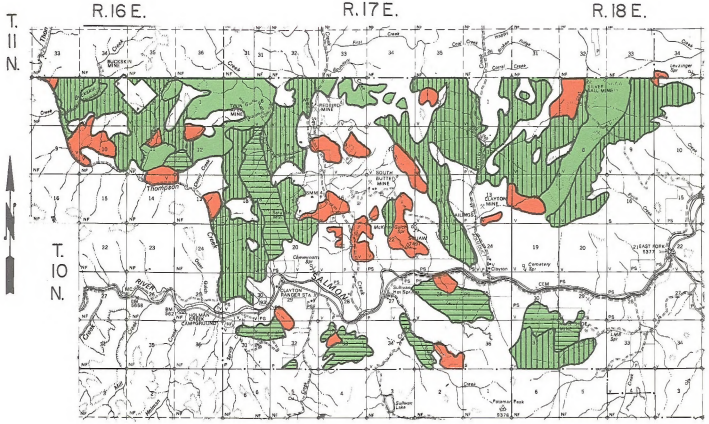

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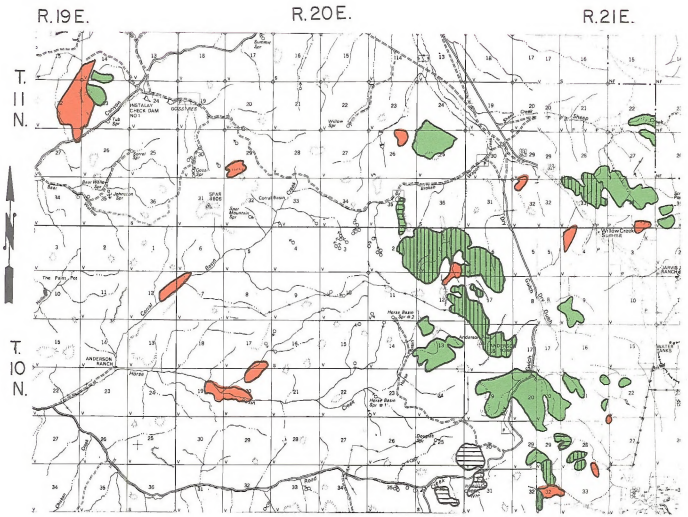

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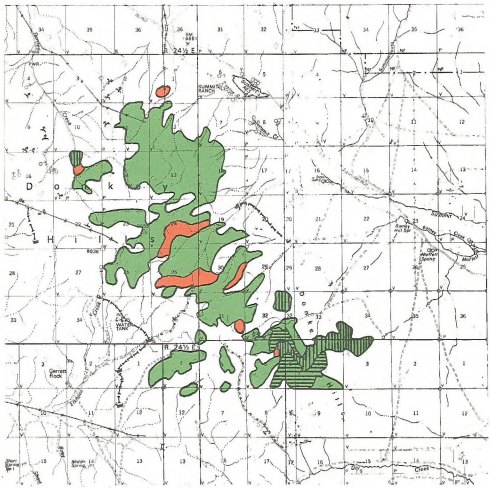

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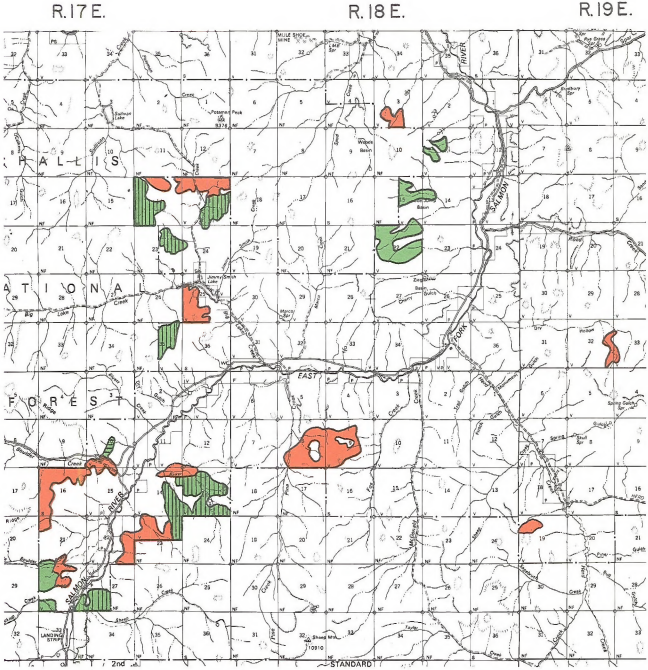

0 1 2 3
Scale in Miles

U. S. DEPARTMENT OF THE INTERIOR
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EASTERN IDAHO
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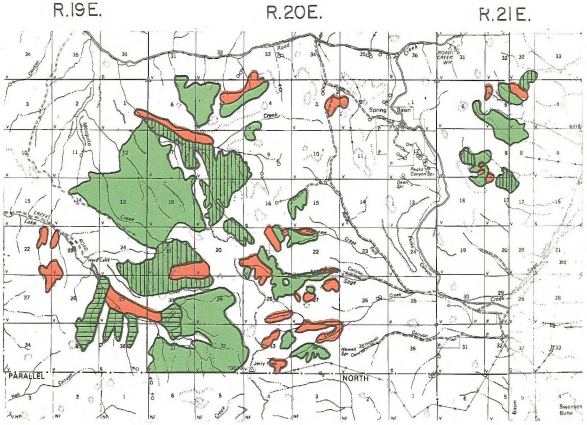

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Scale in Miles

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EASTERN IDAHO SUSTAINED YIELD UNIT 1978

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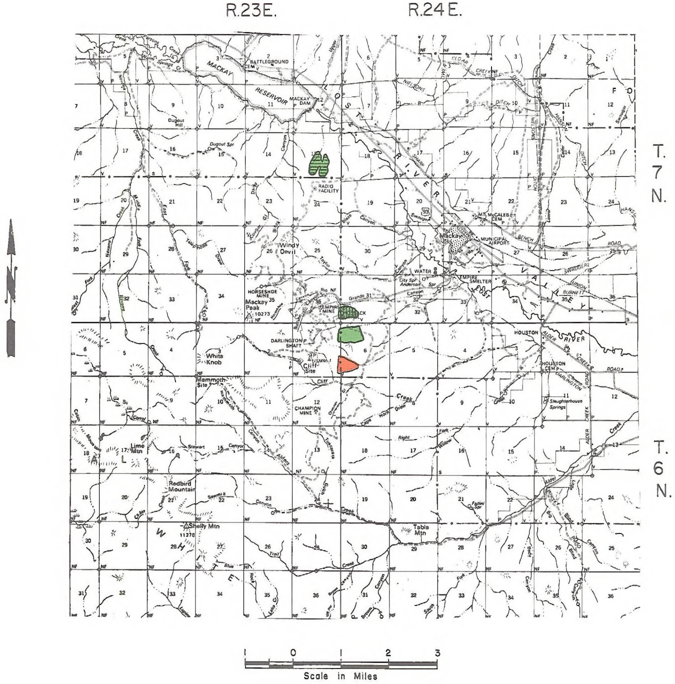

The existing management framework plans (MFP's) and other MFP's in various states of completion are the basis from which were determined the areas where intensive forest management will be practiced. The silvicultural systems to be used will be tempered by multiple use and environmental considerations as recommended in the MFP's.

A timber stand analysis will be done consisting of a series of one-tenth acre plots in each drainage containing more than ten acres of timber. Drainages with less than ten acres will not be sampled. The data to be gathered will include growth rate, stand age, volume per acre, site class, habitat types, stand condition, etc. This data will be gathered over a five-year period as time and funds permit and will be used to update the Unit Resource Analyses (URA's) and MFP's as well as to identify priorities for timber harvest.

An annual timber sale plan will be prepared showing location and volume planned for the respective year and will be coordinated with agencies and landowners and commented on by any interested individual, group, or agency.

A detailed harvest and development plan will be written at least one year prior to entry on the project area. This plan will be part of the respective environmental analysis report for the specific harvest or development project. These plans will show the type of harvest, standards, volume per acre, slash disposal,

equipment to be used, roads and location, as well as special protection area within the timber sale or project area.

HARVEST

Harvest is the final phase of the timber production cycle which involves the conversion of standing trees to commodity materials. Harvest includes the felling of marketable timber according to selected cutting practices, the movement of logs or trees from stump to loading points by use of yarding systems, and their subsequent movement over transportation systems to manufacturing centers. Each of these three steps will be described separately in the parts that follow.

a. Cutting Practices

Selection of the appropriate cutting practices is basically a matter of silvicultural desirability; i.e., a certain practice or combination of practices is applied to a given timber stand in order to favor regeneration and/or to promote growth. An exception is the emergency situation in which trees killed or damaged by fire, insects, disease, or weather are promptly removed in an unscheduled salvage cutting.

The cutting practices used to implement the timber management program are selection, shelterwood, and clearcut. As mentioned earlier, these systems may be used individually or in combination, according to the situation.

1. Selection System

The selection system, whether individual tree or small group selection, provides for continuous regeneration and results in a stand of trees of various ages. The openings left by this system are usually small, similar to natural removal through mortality. The abundance of seed trees left by this system generally protects the soil and provides enough seed to fill these openings with vigorous young seedlings in a short time. Under this system the more tolerant species will usually crowd out or suppress the less tolerant species.

2. Shelterwood System

The shelterwood system provides a relatively even-aged stand by removing the mature trees through a series of harvests. Regeneration occurs during the intervals between harvests. This system leaves a large number of seed trees that are usually uniformly distributed. These seed trees protect the soil and young seedlings and retard the growth of competing weeds, grasses, and shrubs. New growth is generally established prior to the removal of the remaining overstory. This system differs from the selection system since an even-aged stand usually results and all mature trees are generally removed in the final harvest.

3. Clearcut System

The clearcut system is the removal of the mature timber in one cutting with regeneration from the edge or through

reforestation practices. Clearcutting exposes soil to direct sunlight and erosive forces which can degrade the site to such an extent that natural regeneration may be difficult. This method of harvest is used when silvicultural needs cannot be met using other systems.

Clearcutting patches less than 40 acres provides the opportunity for natural reproduction without drastic change in site condition. Clearcuts can be designed to blend with the surrounding landscape and look like natural openings. This system will be used to harvest lodgepole pine which is difficult to manage under the selection and shelterwood systems.

Once the cutting practice(s) is/are selected, those trees or areas designated for cutting and/or trees reserved from cutting are identified on the timber harvest area.

The cutting or falling of trees and bucking them into tree or log-lengths require some mention at this point. These operations are a prerequisite to the movement of trees or logs and constitute a major part of the logging operation. Trees are normally felled in a manner to minimize loss due to breakage and to minimize damage to the residual trees or adjacent stands. "Beds" are sometimes prepared to reduce breakage when very large trees are cut. In addition to topographical criteria, the system of logging to be employed is a factor in the manner and direction in which the trees are felled. In the falling and bucking operation, the chain saw is

the common tool although mechanized blades mounted on mobile equipment are coming into more use, particularly in dealing with relatively small trees on gentle terrain.

b. Yarding Systems

The movement of felled timber to the loading point (landing) is accomplished through the use of a single system or combination of yarding systems best suited for the area to be harvested. Systems that have a potential for being used in the sustained yield unit are horses, tractors, jammers, self-loading trucks, mobile yarder, loader, standing skylines, running skylines, and helicopters.

For purposes of illustration, tractor yarding is most important because 95 percent of all yarding in the SYU is accomplished using this method.

Yarding tractors are of two general types, crawler and wheel. The former has a metal tread while the latter is mounted on rubber and is known as a rubber-tired skidder. Both types are sometimes used with a mounted arch or to draw track-mounted arches or rubber-tired sulkies, devices which suspend one end of the log or group of logs.

Both types of tractors are most effectively used for downhill skidding on slopes under 35 percent and maximum skidding distances of less than 1500 feet. Uphill skidding for short distances is feasible on gentle slopes, particularly for the larger crawler tractors.

c. Transportation Systems

The purpose of transportation in the context of timber management is to provide a system for moving logs from the landing or loading site located in the cutting area to a market destination which may be a few miles to a 100 miles distant.

The dominant transportation system currently in use is the hauling of logs by trucks over roads. Because of the intermingled ownership pattern, the development of the road system often requires cooperation with adjacent landowners to insure access to the county, state, and federal highways that lead to the manufacturing centers. While the Bureau roads serve other forest values and uses, the initial cost of their construction and maintenance is usually carried by the timber sale contract. Consequently, in these instances, the time of construction is scheduled in conjunction with the sale of a given tract of timber. Following the completion of road construction, the roads can be used jointly for protection and other activities associated with the timber management program in addition to timber harvest activities. Not all roads are part of the permanent road network. Some are used for a short period of time and then put-to-bed.

Road construction operations are clearing and grubbing, excavation, finishing, and surfacing. Any or all of these operations may be performed on a given road project at the same time and may overlap to a certain extent.

1. Clearing and Grubbing. Clearing refers to the removal of trees, brush, and debris from within the designated limits of the road's location. Grubbing refers to the removal of roots, stumps, and similar obstacles to a nominal depth below the existing ground area. Frequently, clearing and grubbing comprise a single operation and may include the removal of topsoil to a shallow depth. Felling of small trees and uprooting of stumps are usually done by a bulldozer; the operation may also involve the use of explosives and other equipment.

2. Excavation. This practice involves moving soil material from one place to another through an earth-moving operation. It normally constitutes the major part of the road constructon operation and is carried out in conjunction with the installation of such structures as culverts, drainage pipes, and bridges.

The equipment most widely used in excavating work is a wheel or track (crawler) type tractor with a steel blade that can be raised and lowered. Equipped in this manner, a tractor can push material from place to place and shape the ground. Tractors can also be attached to scrapers for excavation and short hauls; however, trucks or self-propelled scrapers are usually used when earth is to be moved any distance.

3. Finishing. This practice is performed primarily by a motor grader and includes such items as trimming and finishing of slopes and the fine grading operations required to bring the subgrade to the final desired elevation.

4. Surfacing. In situations where a road is expected to receive heavy use, gravel or crushed rock is placed upon the earth subgrade. Rock is spread with a motor grader as in the finishing phase above. Rock for surfacing purposes is obtained from gravel pits or rock crushing plants.

DEVELOPMENT

The main goals of the development phase are to (1) reforest as soon as possible commercial forest depleated by harvests or natural catastrophies such as fire, wind, or insects; (2) precommercial and commercial thinnings to stimulate and increase growth rates and production on these commercial forest lands. The practices involved in meeting these objectives are seed collection, site preparation, regeneration, and stand improvement cuttings. These practices may be used either individually or in combination depending on the site condition.

Seed collection involves collecting seed from the same area or from areas adjacent to the proposed reforestation project. When quality trees based on form class, height, growth rate, etc., are available, cones will be collected from them. Where none are found in the area of the project, cones from squirrel caches in the area or cones from nearby areas on similar sites are collected. The seed will be sent to a nursery for testing and planting prior to the project.

Most site preparation will occur during harvest operations. However, where dense stands of grass occur a small area will be cleared around each planting site. This usually occurs where the habital type involves pine grass as the major grass species. This will eliminate or reduce competition during the first critical years following regeneration.

Management prescriptions for intolerant species such as lodgepole pine and Ponderosa pine will require a greater degree of site preparation than for the most shade tolerant species such as Douglas-fir and Engelmann spruce.

Seedlings will be planted to reforest all commercial forest areas to supplement natural regeneration. These plantings can be done by hand with tools such as hoes, mattocks, dibbles, soil augers, or by tractor-driven machines. Seedlings will be either "bare-root" or "containerized." The bare-root seedlings are lifted from nursery beds prior to breaking dormancy. They are inspected, sorted and culled, packaged, and placed in cold storage until the planting sites are ready, at which time the seedlings are transported to the site for planting. Containerized seedlings are grown in individual containers and are either planted in the container or removed from the container at the planting site. It is anticipated that approximately 500,000 seedlings will be planted annually over the ten-year period. All harvest systems will be designed to allow adequate natural regeneration.

Direct seeding will not be used except to augment planting where fire or heavy windthrow has depleated the area.

During thinning operations, surplus trees in established stands of young, unmerchantable, or merchantable timber are removed to release the remaining trees from competition for light, moisture, and nutrient. Thinning concentrates the growth potential of the stand on the higher quality trees. The main objective of these practices is to produce merchantable wood volume and values sooner than stands in their natural condition. Commercial thinning will recover the useable material normally lost to mortality. None of the material in precommercial thinnings can be used due to its small size.

Chain saws will be used in thinnings except where material under two inches in diameter is involved. Pruning shears or clippers will be used for material under two inches in diameter. No chemicals will be used for thinnings in this SYU. The primary species to be thinned are Douglas-fir, lodgepole pine, and Engelemann spruce. Trees to be left are selected on the basis of spacing and condition. Leave tree selection should be based on leaving 60 percent of the existing basal area (B.A.) per acre. If a single thinning to 60 percent of the existing B.A. would create too much slash or the possibility of sun scald, two or more thinnings spaced over five-ten years may be required. Spacing requirements will be determined using the average stand diameter and calculating the B.A. per acre of that average diameter. Spacing can be derived from the following formula:

$$\text{Number of stems/acre} = \frac{60\% \times \text{B.A./acre}}{\text{B.A. of acre diameter}}$$

$$\text{Spacing in square feet} = \frac{43{,}560 \text{ sq. ft.}}{\text{number of stems/acre}}$$

Leave tree selection should be based on a combination of form, spacing, defect, live crown ratio and disease occurrence. Slash disposal should be lopped and scattered except where heavy slash accumulation occurs. In this event the slash should either be clipped and scattered or piled and burned.

Precommercial thinnings of lodgepole pine may not follow the above procedure since the number of stems per acre is more critical to subsequent management decision than basal area. If too many stems per acre are removed, the future options of the manager are restricted.

PROTECTION

The main objective of forest protection is to prevent or reduce damage to the forest resources from fire, insects, disease, and/or timber trespass.

Three basic elements are involved in protecting the forest resources from fire. These elements are prevention, presuppression, and suppression.

Fire prevention and presuppression include fuel reduction through slash disposal activities, public education, and contract

compliance inspection. Slash disposal projects reduce the surface accumulation of fine fuels remaining after logging activities. By removing or reducing these fine fuels, the potential for a damaging wildfire is lessened and the potential rate of spread is reduced. Skid roads, trails, firebreaks, and mainhaul roads provide ready access for fire crews. Educating the public about known areas that are potentially hazardous during periods of critical fire danger via media announcements similar to the "Smokey Bear" campaign, and posting, signing, and patroling these areas during the peak of fire conditions help reduce man-caused fires. General public use and woods operations can also be suspended during periods of extreme fire danger. The inspection of logging equipment for compliance with State and Federal fire laws under the terms of timber sale contracts also helps reduce the threat of man-made fires.

Suppression activities include all the current control practices such as aerial retardents, helitack crews, heavy equipment, and organized crews. Any combination of these measures may be undertaken to control wildfires throughout the SYU.

The purpose of insect control measures is to prevent or reduce damage to forest values by insect outbreaks using man-made methods while encouraging natural control agents. These methods of control are silvicultural (prevention), direct and/or biological. The particular methods used will depend upon the species of insect, degree of infestation, and the condition of the area where the infestation occurs.

Silvicultural practices will be utilized to keep the forest healthy and vigorous as a means of reducing the potential for insect buildups. Harvesting the weakened or overmature trees and thinnings eliminate the most susceptable trees from the stand. Slash disposal will reduce the potential for insect buildup. Thinnings and regeneration harvests can be designed to favor mixed species stands which are less susceptable to insect damage than are pure stands.

Direct control of insect epidemics involves the destruction of the adult and larval stages by sanitation harvest where the infested trees are removed as marketable material and "on site" burning of infested, unmarketable material after felling and piling.

Biological control uses natural parasites, predaceous insects, and insect-eating birds and mammals such as the woodpecker to prevent the buildup of insects to epidemic levels. These agents can and often do control the insects. However, there is a time lag where these agents may take several years to overcome the damaging insects. The damages resulting during this time lag are usually unacceptable in economic terms.

Maintaining a diverse natural forest situation is very important for biological control in the forest community. An example of this is cavity-nesting birds such as woodpeckers. They consume large numbers of damaging insects, but if suitable nest trees are not left during harvest activities, the habitat and populations of woodpeckers

will decline. Harvest systems can be designed to leave enough snags to maintain or increase the number of cavity-nesting birds.

The main objective of forest disease control practices on the SYU are to eradicate or reduce the losses from dwarf mistletoe, comandra rust, western gall rust, and other tree diseases. This objective will be met through the use of silvicultural and physical (direct) control practices.

Silvicultural control is the prevention or reduction of damage by practices such as species conversion, development of mixed stand where the diseases are host specific, and maintenance of stands in a healthy and vigorous condition through the regulation of stand composition, density, and age.

Physical or direct control removes or reduces the levels of infection to an acceptable level. This type of practice is aimed toward the removal of all infected trees generally through a series of clearcuts.

Timber trespass can cause damage by improper cutting, skidding, road building, and slash disposal. Trespass control is directed toward educating the public and surveillance of forested areas to identify trespassers, thereby preventing or minimizing damage.

GUIDELINES

The following guidelines for forest management activities for the eastern Idaho SYU are recommended:

1. Merchantable timber or tracts identified as intensive management areas is to be systematically harvested using appropriate methods.

2. Marking criteria for Douglas-fir will be based on each individual tree or group of trees in the stand. Care will be taken to remove no more than 40 percent of the overstory, for continuous canopy effect, during the first entry into the stand. Marking criteria for lodgepole pine will be irregularly shaped clearcut blocks of 40 acres or less, blended into the surrounding landscape. If select harvest is utilized, only 35 percent of the overstory will be removed during first cutting.

3. Regenerate by natural means except where an area has been depleated or heavily affected by insects, disease, fire, or other natural catastrophy. Underplanting or supplemental planting shall be considered when natural regeneration does not occur within five years.

4. Yarding methods are tractor, cable, or aerial systems. Maximum slope for use of tractors will be 40 percent. Tractors are to be without blades except where approved in advance by the area manager and under circumstances where it is made necessary by the stand condition and the goals of the management for that specific stand.

5. Slash hazard reduction should be accomplished through lop and scatter in partial cut stands or piled and burned at the decks.

6. Prior to logging, all main lines, spurs, landings, and skid trails will be flagged out and built; and all logs will be moved over these roads and trails. Strict compliance with this stipulation will be necessary to prevent unnecessary damage to the residual stand. Stumps along the edge of the skid roads are to be high enough (two-three feet) to act as bumpers to protect the residual trees.

7. Erosion control precautions will be taken on skid trails, on existing roads, and on new construction. Such precautions include slash spread over skid trails and the construction of water bars. All roads and skid trails to be closed will be seeded to grass. The grass seed mixture will be selected for the forest community and elevation to be applied additional seed placed on each cross-drain.

8. All non-stocked intensive management areas will be reseeded or reforested with either lodgepole pine, Douglas-fir, Ponderosa pine, or spruce (according to location and vegetative type of the area). The seed should be broadcast in the late fall prior to the heavy snows to allow for germination during the following spring. Seedlings are to be planted early in the spring season while the soil moisture is high, or in late fall in areas that do not have a history of frost heave.

9. Basal area determinations will be completed prior to marking. A project file is to be compiled containing management plans and stand improvement goals by planning unit.

10. Logging should not be allowed prior to June 1 or after December 1 to minimize soil erosion during spring runoff and melting fall snows except in areas that can be considered for winter logging.

11. Before any road or skid trail is constructed outside the intensive management area, the soil erosion hazard is to be determined and the appropriate restrictions applied. Road grades should not exceed 10 percent and should be held to 6 percent or less if possible, without resulting in excessive amounts of roading.

12. Salvage operations will have priority when trees are destroyed by fire, disease, insects, or other forest pests. Salvage operations will be coordinated with wildlife and archaeologist personnel.

13. Roads required for the management and protection of the forest resources are to be kept to a minimum number and standard. Such roads should be located, designed, and constructed for the total land use and resource values involved. These roads should be constructed prior to any harvest activities.

14. Areas which have been cut over by timber sales or found to be depleted from trespass or other forces and are not restocked naturally are to be planted or seeded. Following seeding or planting, protect area from domestic sheep or cattle by fencing

or herding for four to six years, or until such time as the plantation is firmly established. Protect such areas from damage by porcupines, gophers, and other rodents.

15. The publication, Silviculture of Subalpine Forests in the Central and Southern Rocky Mountains: The Status of our Knowledge, by Robert Alexander, May, 1974, USDA Forest Service Research Paper RM-121, is to be used as a reference when planning in spruce-fir forest types.

16. The publication, Forest Harvest, Residue Treatment, Reforestation and Protection of Water Quality, by James M. Montgomery, Consulting Engineers, Inc., April, 1976, U.S. Environmental Protection Agency, EPA 910/9-76-020 for Region X, should be used in slash disposal, reforestation, and harvest projects which could impact water quality in nearby streams.

17. A 60-300 foot buffer strip should be left on either side of a live stream as dictated by terrain.

18. Timber operations near elk calving areas will be restricted during the period May 15 to July 1 so as not to disturb the elk during this critical period.

19. No winter logging operation will occur in critical deer, elk, or free-roaming horse wintering range.

20. No clearcutting will be allowed adjacent to parks where forest grouse nesting occurs.

21. Assuming low fire hazard, leave a uniform scattering of 3-5 snags per acre for cavity nesting birds and perch trees.

22. Lop and scatter slash where possible with some accumulation in or near openings for escape cover for small non-game animals and for hiding areas for fawns and calves.

WILDERNESS

Under Section 603 of the Federal Land Policy and Management Act, BLM is responsible for ensuring that the public lands are inventoried for wilderness characteristics (as described in the Wilderness Act of 1964). Those lands with wilderness characteristcs are to be managed so as not to impair their suitability for preservation as wilderness.

Identification of areas with wilderness characteristics has not been accomplished to date but is tentatively scheduled to be determined between October, 1978, and July, 1980.

The major activity under an intensive timber management program is logging, which incorporates several methods to gain access to an area and remove timber. Most logging methods could not occur without damaging the wilderness characteristics of an area, thus jeopardizing Congress' opportunity to preserve the area as wilderness.

During the wilderness inventory and study period, procedures for timber removal and management operations may have to be modified

to ensure the interim protection of potential wilderness areas. To accomplish this protection, environmental assessments prepared for forestry actions will identify lands with wilderness characteristics and assess the impacts the actions would have on the areas' wilderness values. If the proposed actions would, after considering available mitigating measures, impair the areas' suitability for preservation, the proposed management actions will be modified to avoid these areas, or they cannot be approved until Congressional action removes the areas from further wilderness consideration.

Areas which do not possess wilderness characteristics will be cleared from further wilderness consideration.

CHAPTER 2

DESCRIPTION OF THE ENVIRONMENT

The environment, as discussed here, will be that found on or closely associated with those tracts of public lands colored green in the map section of Chapter 1.

The following description will be in general terms. More site specific detail will be given in the EAR's for individual project plans and timber sale proposals. More detailed descriptions of the environment are found in the Unit Resource Analysis, part of the Bureau planning system, where they exist.

CLIMATE AND AIR QUALITY

Eastern Idaho is characterized by great topographic relief which creates significant climatological variations within short horizontal distances. All of Idaho is west of the Continental Divide, and, despite being approximately 500 miles from the Pacific Ocean, is influenced primarily by maritime air masses. Having a more continental climate that western and northern areas of Idaho, the eastern region is characterized by a wider range between summer and winter temperatures, and the precipitation pattern is marked by wet winters and dry summers.

Elevation plays a much more important role in determining temperatures than does latitudinal position. Warmer temperatures are

generally found at lowest elevations, and colder temperatures are found at highest elevations--the possible exception occurring in winter when pockets of very cold drainage air are likely to collect in the valleys. In general, summer temperatures range from mean minima of 40-52°F to mean maxima of 76-80°F; winter temperatures range from mean minima of 0-12°F to mean maxima of 22-36°F. Mean annual total precipitation in eastern Idaho ranges from less than ten inches in the Snake River Valley to about forty inches in a few isolated mountain areas.

Air quality throughout the timber-producing areas of eastern Idaho is good. However, severe dry weather conditions may produce dusty periods which can produce haze over large areas.

Smoke from wildfire is essentially nonexistant because of intensive fire prevention and management activities. However, a drying trend or drought in the area, an accumulation of beetle-killed timber and dead vegetative matter, followed by electrical storms or man's carelessness could reverse this situation in a very short time.

SOILS

The soils within the unit have a wide variation in productivity, fertility, and stability. This is the result of the different parent materials being influenced by the various soil-forming processes. Generally, the most productive soils are found in the

Depositional Land Group, those formed by glacial and fluvial deposits. The Strongly Glaciated Land Group contains shallow soils that are generally very low in fertility and are very senstitive to soil-disturbing factors.

Elevation and glacial activity have influenced the soils in this area. Above 6,500 feet most soils tend to be very shallow and rocky with weak development. In some areas of intense glacial scouring, very little soil is remaining over the bedrock. At mid elevations between 5,500-6,500 feet, moderately deep, fertile soils have developed on the broad, relatively flat ridgetops. These soils are moderately susceptible to water erosion. A few small areas along south-facing slopes and basins have greater exposure and are more highly erodible. Soils at this elevation occurring in the bottom of the major canyons are composed of glacial till and outwash. Generally, these soils are developed over deep boulder beds and are consequently well drained and moderately resistant to erosion. Soils of lower elevations are generally deep and fertile with little surface rock. These soils, and some at mid elevations, have a moderate tendency to slip or slump when saturated with water during the spring. This is particularly evident in the vicinity of springs and steep slopes around the heads of small draws.

On the gentle mountain slopes, the bedrock is slightly altered and usually is not more than 36 inches below the surface. On the steeper lands, the depth to bedrock varies from 12 to 36 inches. On

extremely steep slopes, only a few inches of soil or soil material overlays the partly weathered bedrock. Where fine-textured materials occur, the soils often have moderately well-developed subsoils. This fine textured subsoil, however, is seldom present on very steep slopes where little or no soil development has taken place due to geological erosion removing soil faster than it can develop. The medium-textured, stony soils have only weak to moderately developed subsoils. In these cases, the subsoils are of nearly the same texture as the surface soil horizons.

GEOLOGY

Eastern Idaho includes three physiographic provinces: Basin and Range, Columbia Intermountain, and Northern Rocky Mountain.

The Basin and Range Province includes the Overthrust Belt of southeast Idaho, western Wyoming, and northern Utah. It is composed of complex faulted and tilted rock masses of Cambrian through Cenozoic age. Except for some basalt and a few igneous dikes, the rocks exposed are all sedimentary.

The most important mineral production is phosphate. Vanadium is associated within the phosphate rock and is recovered as a by-product from the ferro-phosphate slag. Uranium also exists in the Phosphoric Formation, but to this time is not being recovered. Coal has been produced from the Teton River Basin, although there is no commercial production. Some gold has been mined from stream placers

and lode deposits on National Forest lands. Limestone and quartzite are mined and used in the phosphate and vanadium plants in this area. Recent discoveries of oil and gas have been made in the Overthrust Belt in Wyoming and Utah. Most of the available Federal lands are now under oil and gas leases, and several wildcat wells have been drilled or are scheduled to be drilled in this area. No other mineral deposits of importance exist, however, this province is considered valuable for its geothermal resources.

The Columbia Intermountain Province, locally called the Snake River Plain, and the Island Park Caldera is composed entirely of volcanic rocks which are oftentimes covered with sediments. Basaltic rock is the main component although there is gradation in composition to rhyolitic rock types. The youngest flows occur at Craters of the Moon National Monument (about 2,000 years old), while the oldest are probably Pliocene age and scattered throughout the Snake River Plain.

The Island Park Caldera structure adjoining the Yellowstone Park region resulted from eruption of silicic volcanic rock. Ash flows and ash flow tuffs are common.

Valuable minerals are almost unknown in this province. There is speculation that oil and gas or geothermal resources may underlie the region. Gold has been mined from some of the Snake River channels. Otherwise, sand and gravel and building stone are the most important mineral materials.

The Centinnela, Beaverhead, Lemhi, Lost River, and Pioneer Ranges make up part of the Northern Rocky Mountain Province. Limestone and dolomite are the main rock types although all sedimentary rock are present, including phosphate and travertine.

This province was initially formed by thrust faulting. Recent normal faulting has produced deep alluvial filled valleys between mountain ranges. Several periods of glaciation have been documented. Large glacial-fluvial fans descend from most of the lateral valleys.

Mining of base metals, mainly silver, lead, zinc, and copper, has occurred in the mountains. Lava Creek, Dome, Hamilton, and Birch Creek mining districts are the main areas of interest. Travertine claims exist in the upper Medicine Lodge Creek area, and opal is mined near Spencer, Idaho. Varicite claims exist in the Henry's Lake area.

WATER

Tributaries of the larger rivers such as Henry's Fork, Snake and Salmon Rivers are generally in good to excellent condition. Most are spring fed from ground water and contain very little surface runoff. This accounts for low sediment loads within the feeder streams.

The following tributaries of the Lemhi River will be monitored for changes in water quality as a result of timber harvesting

activities: Freeman Creek, Wimpey Creek, McDevitt Creek, Sawmill Creek, and Agency Creek. Plans are to monitor before, during, and after harvest activities to determine the effects of logging practices on water quality. Other drainages throughout the SYU will be monitored as needs are identified.

VEGETATION

Forested areas are composed primarily of Douglas-fir and lodgepole pine with lesser amounts of Engelmann spruce, subalpine fir, and limber pine. Uncut stands range in volume from three thousand board feet (MBF) per acre to over 25 MBF per acre. Differences in timber sites are due primarily to aspect and soil drainage characteristics.

Douglas-fir types are found generally from 5,500 to 8,000 feet in elevation in association with an assortment of understory species. Lower elevation Douglas-fir is characterized by the "stringer" effect produced by drainage patterns having northerly aspects. Large blocks of Douglas-fir exist with a scattering of lodgepole pine and aspen at elevations above 6,500 feet and to a lesser extent in the subalpine fir and Engelmann spruce belt above 8,000 feet.

To date, problems with tree damaging insects in Douglas-fir stands have not been serious, although several minor outbreaks of Douglas-fir bark beetles are occurring throughout the SYU.

The potential exists, however, for spruce budworm, Douglas-fir tussock moth, and Douglas-fir beetle to reach epidemic proportions in the near future, especially in the overmature stands.

Lodgepole pine stands have developed where fire has destroyed the original forest stands. Except where the seed source was completely eliminated, Douglas-fir or subalpine fir are gradually reestablishing themselves in the understory.

Since 1958, mountain pine beetle has been epidemic in lodgepole pine stands throughout the Island Park area. The area north of Palisades Reservoir to the Montana border has been most heavily hit with patches of mortality as high as 90 percent. From 1965 to 1970 the USFS fought the epidemic with a combination of chemical spraying and logging. Public domain stands next to FS lands that were sprayed received the same treatment. The spraying was not completely effective; it only slowed the spread of the beetle. Since 1970, the only treatment has been to salvage log stands attacked by the beetle.

BLM timber stands are nearly all outside the most severe infestation area, although a few have been heavily hit. No lodgepole stands in the SYU have completely escaped.

Except in the higher elevations, Engelmann spruce and subalpine fir are often found as an understory component due to their tolerance for shade. These species are easily damaged by fire. They are usually found along the moist soils of creek bottoms and in the high

alpine types which are rarely disturbed by fire. Limber pine is characteristic of ridgetops and near ridgetop locations.

ENDANGERED PLANT SPECIES

In accordance with the Endangered Species Act of 1973, we have checked the list of endangered and threatened plants in the Federal Register June 16, 1976, and July 1, 1975, respectively, and compiled in Endangered and Threatened Plants of Idaho, published by the University of Idaho. The following is a list of plants known to exist in the vicinity of BLM timbered lands, however, there have been no positive identification of these species on the lands described in this report. None of these species exist within timber types but may be found in areas that are potential road location sites.

Astragalus ammis - amissi (endangered) - found in Douglas fir and sagebursh vegetative types in steep limestone cliff and talus at the base of cliffs.

Astragalus lentiginosus var. latus (threatened) - not much is known about this species except that it was found in Clark County, probably on BLM land.

Synthyris hendersonii var. canescens (threatened) - found in the subalpine fir whitebark pine zone on a variety of soil types above 9,000 feet in elevation.

Claytonia flava var. flava (threatened) - found in lodgepole pine vegetative zones in moist meadow conditions.

Silene scapose var. labotta (threatened) - found in meadows and hillsides 7,500 feet in elevation and lower; in juniper-sagebrush communities.

Penstemon lemhiensis (threatened) - found in Ponderosa pine or sagebrush communities associated with western wheatgrass on dry, rocky slopes below 7,500 feet elevation.

ANIMALS

The Eastern Idaho Sustained Yield Unit contains a diversity of wildlife habitats. In general, timber stands on the Unit border sagebrush, sagebrush/grass, wet meadows and bogs, parks, rock ridges, and willow bottomlands. This diversity of habitats, with its resulting high percentage of "edge" area, supports a wide variety of wildlife species.

The presence of unique habitat types (frequently containing seeps, springs, streams, etc.) in or immediate to the timbered areas allows distribution of terrestrial and aquatic faunas into areas they would otherwise be reluctant or unable to use.

NON-GAME SPECIES

Many non-game species are associated with the unique habitats. A habitat inventory conducted in the Salmon District during the summer of 1977 on representative forest habitat types revealed 129

species of birds, including raptors and cavity nesters; 53 species of mammals; and 14 species of reptiles and amphibians. The report contains an analysis of habitat, use patterns, and theorized impacts of logging on non-game.

GAME SPECIES

There are four species of upland game birds, two species of small game (rabbits), and seven species of big game utilizing the timbered portions of the public lands.

Blue grouse are by far the most common of the upland game birds present and probably have the most to gain or lose by timber harvest. Blue grouse use the timbered areas primarily during the winter months for food and cover. Use of conifer needles for food increases rapidly in the fall with the dissication of berries (gooseberry, etc.) and forbs. Crop analysis in the fall of 1976 indicated 25 percent of the birds harvested in September used conifer needles as compared to 73 percent of October birds. Forty-one crops collected during 1976 and 1977 showed conifer needles occurring at 37 percent frequency, and 88 percent of the needles were Douglas fir.

The largest concentrations of blue grouse are typically found where riparian areas are adjacent to forested tracts. Timbered areas a considerable distance from riparian habitat are used less by blue grouse, except during the winter where ridges with conifers are preferred.

Small game consists of only rabbits. Deer, moose, elk, antelope, bighorn sheep, bear, mountain lion, and mountain goats are the big game species present.

Deer are the most common big game species present. Although fair numbers are present in some areas, most summer on USFS lands. Winter use on BLM land is heavy and unit-wide. Winter snow normally forces deer out of the high elevations containing most of the BLM timber production. Some lower elevation stringers or patches of timber provide vitally needed cover for deer during all seasons.

Elk are more dependent on timbered areas than any of the other big game species. Adequate timber or other cover type is needed for both escape cover (at all seasons) and thermal cover during the winter.

Elk follow extensive elevational migrations to lower elevations where winter range is critical to the survival of the species. A significant proportion of the SYU timber consists of Douglas-fir, at mid to low elevations. Douglas-fir is commonly utilized by elk as cover during severe winter weather. Elk typically forage during winter on south and west slopes, and utilize the contiguous Douglas-fir on ridges and upper north and east slopes as bedding cover.

During early spring, elk utilize rough slopes near Douglas-fir stands, where early green-up is available.

Calving commonly occurs in or near Douglas-fir edges, where snow depth precludes use of higher elevations.

Moose exist near the eastern border of Idaho and are associated with willow and pine-fir types on a yearlong basis. Since moose forage primarily on browse species, it is generally recognized that seral forest stages produce more forage at more advanced successional stages. Climax forest produces the least forage, but portions of these areas may be important for loafing, escape cover, and protection during severe weather periods.

FISHERIES

Typically, the fish populations in the small, high elevation perennial streams consist of native populations of whitefish, cutthroat, and rainbow trout while rainbow and anadromous species dominate the fishery in lower elevation lands. Non-game species include squawfish, suckers, shiners, and sculpin and are considered common in the low elevation reaches. Sculpin are the primary non-game species at higher elevation tributary streams.

The economic value of the fisheries has traditionally been one of the single greatest contributors to the local economy of any single resource. With the present total of eight dams on the lower Snake and Columbia Rivers, the impact to the anadromous runs has been significant. Improvements to reduce mortality of upstream and downstream migrants coupled with increased hatchery production and improved habitat condition for wild stock, may improve the future of the anadromous fishery.

The Salmon River is a major producer of anadromous fish (salmon and steelhead) for the entire Columbia River system. The adults of both species spawn in the Salmon River and tributary streams and then migrate to the ocean via the Snake and Columbia Rivers. It has been estimated (Mallet and Bjorn, 1970) that Idaho annually produces 55 percent of the steelhead, 34 percent of the spring Chinook, and 41 percent of the summer Chinook for the entire Columbia River system. Of the state total, the Salmon River accounts for 50 percent of the steelhead and 98 percent of the Chinook.

Two areas are considered critical habitat for anadromous species. The main East Fork and Herd Creek are the most important streams in the upper watershed along with the Lemhi River between Lemhi and Leadore. All of these streams are critical habitat for salmon.

Habitat condition and water quality are generally better on timbered lands as compared to the lower elevation lands that are privately owned and heavily impacted by agriculture and ranching activities.

THREATENED AND ENDANGERED SPECIES

The Endangered Species Act of 1973 officially recognizes two categories of animals that are in danger of extinction or severe reductions in numbers. These are the Endangered Species and Threatened Species. The endangered list has been completed, but no comparable threatened list has as yet been officially published.

Most of the popular wildlife species distribution shows the range of the spotted bat extending into southern Idaho. It has been reported in Yellowstone County, Montana; Canyon County, Idaho; and in three locations in Wyoming. They have been collected over or adjacent to ponds, reservoirs, etc.

The Northern Rocky Mountain wolf (Canis lupus irremotus) has been included on the United States list of endangered species (Federal Register: June 4, 1973, Vol. 38 (106):14678). Section 7 of the Endangered Species Act of 1976 (P.L. 93-205) clearly points out the responsibility of all Federal agencies to "conserve" endangered and threatened species and the habitats critical to their survival.

Wolf sightings have been confirmed by the Idaho Fish and Game from Monida Pass located north of Dubois to the Yellowstone Park boundary. Wolves are also listed as present in Wyoming and Montana across the State lines. Thus, this species may occasionally be in the vicinity of BLM timberlands.

The American peregrine falcon (Falco peregrinus anatum) is known to inhabit the area. Peregrine falcon habitat seems to be related directly to the riparian and marshland vegetative types. The primary prey of this species are birds such as the passerine group, shore birds, and waterfowl. Man's activities and presence are prehaps the greatest decimating factor for the peregrine. The use of pesticides has adversely affected its breeding capability.

Illegal shooting and harassment at its nesting sites take an additional toll, and human disturbance in general near nesting sites is believed to affect their nesting success. The peregrine falcon does not normally inhabit timber types and therefore will not be considered further in this report.

The whooping crane (Grus americana), an endangered species, has been recently introduced into the study area via the foster parent program. Whooping crane eggs were taken from Canada and placed under nesting Greater Sandhill cranes at Grays Lake National Wildlife Refuge. Fourteen eggs were transplanted in this manner; nine of them hatched. Six young were successfully raised to flight state. These young whoopers have migrated and in November, 1975, were wintering on the Bosque del Apache Refuge in New Mexico.

It is anticipated that in the future these birds will follow their parents during migration and eventually set up nesting territories of their own in and around Grays Lake National Wildlife Refuge.

The bald eagle (Haliaeetus leucocephalus) was recently classed as endangered. The law is set forth in the Act for the Protection of Bald and Golden Eagles (16 U.S.C. 668-668d) and regulations derived therefrom at Title 50 CFR.

Several pairs of these eagles nest within the SYU, and hundreds winter along the larger rivers and around lakes and reservoirs.

Generally, bald eagles nest away from commercial timbered areas. Eagles commonly roost in forested areas near the Snake River, primarily between November and March, in the Burley and Idaho Falls Districts.

Since July 28, 1975, the grizzly bear (Ursus Arctos Horribilis) has been listed as a threatened species on the "Threatened and Endangered Species List" as published in the Federal Register by the U.S. Fish and Wildlife Service. On November 5, 1976, the U.S. Fish and Wildlife Service published in the Federal Register their proposed boundaries for a designated grizzly bear critical habitat area. Grizzly observations have been confined to the more remote forested regions of the unit in the Henry's Lake and Island Park areas on the Targhee National Forest. Habitat suitable for the grizzly generally consists of rock slides, stream bottoms, alpine meadows, and heavy timber. Currently, information on the grizzly is being obtained by the Interagency Grizzly Bear Study Team, and the study area includes Yellowstone National Park and portions of Idaho, Montana, and Wyoming. In Idaho the critical grizzly habitat exists between the Union Pacific Railroad and the Montana border northeast of Ashton, Idaho (Federal Register: Vol. 41, No. 219, dated 11/11/76). Sightings and kills of grizzly bear have been documented by an Interagency Grizzly Bear Study Team (Basile, 4/19/77) in the Henry's Lake and Island Park vicinity, 1970-1975.

RECREATION

The forested areas of the Eastern Idaho Sustained Yield Unit are natural recreation attractions. These areas offer hunting, fishing, off-road vehicle trails, hiking, camping, and horseback riding opportunities, as well as emotional appeal in regards to aesthetics, solitude, and shelter. In general, BLM lands in eastern Idaho are not heavily forested. This factor increases the recreational value of existing forested areas and tends to concentrate recreational use.

As a rule, hunting, sightseeing, and off-road vehicle use (including snowmobiling) are the major recreational uses in proposed timber management areas. A large percentage of recreational use is connected directly to hunting. Hunters establish small undeveloped campgrounds (usually along or near drainages). Most hunters use some type of off-road vehicle to gain access to hunting areas, and they are also considered sightseers when traveling to and visiting the areas. The unit offers big game, small mammals, and upland game birds. Table 1 lists the most commonly hunted animals in and around forested areas.

Table 1

Commonly Hunted Animals and Birds

Big Game	Upland Game
1. Elk	1. Blue Grouse
2. Black Bear	2. Sage Grouse
3. Mule Deer	3. Ruffed Grouse
4. Mountain Lion	4. Spruce Grouse
5. Moose	5. Hungarian Partridge
Small Game	**Fur Bearers**
1. Rabbit	1. Beaver
	2. Badger

A recent increase in the number of people seeking "backcountry" primitive and wilderness experiences has led to an increased number of backpackers, horseback riders, and cross-country skiers. Precise visitor use statistics for most activities is not available. However, an increasing trend in the total number of people coming into the unit has been noted.

CULTURAL RESOURCES

Federal agencies have been charged with responsibility for the cultural resources on lands under their jurisdiction. Through a series of laws beginning with the Antiquities Act of 1906, BLM has been authorized to identify, protect, and enhance such resources on public lands. The following procedures were used to identify the cultural resources in the Eastern Idaho SYU's:

1. The National Register of Historic Places was consulted.
2. A literature search was undertaken.
3. Selected areas were surveyed for cultural values.

Based on the above, a variety of prehistoric and historic features have been recorded in the Eastern Idaho SYU's to which BLM must make a management commitment.

Only one historic site in the Eastern Idaho SYU has been nominated to the National Register for Historic Places--the Lander Cutoff. No doubt many other historic and prehistoric sites exist in the SYU that remain to be inventoried and evaluated. Eastern Idaho was the location of early historic activity, especially mining, ranching, and commerce. Remains of old cabins, mining camps, and wagon roads are a few of the values expected to be located within the area.

SOCIO-ECONOMIC CONDITIONS

Idaho's residents, in general, favor limited population growth and development for their state. However, in a June, 1974, Southeast Idaho Council of Governments-ISU Government Research Public Opinion Survey covering Bannock, Bingham, Power, Caribou, Oneida, Franklin, and Bear Lake Counties, 70 percent of the survey respondents favored population growth at its present or faster rate. The development that is desired is expected, primiarily, to provide a high(er) quality of life for residents. The desired growth rate is that now in existence or slightly less. People, furthermore, prefer more jobs, increased economic diversification, and environmental protection. Sectors in which growth is desired are agriculture and non-polluting manufacturing. Seventy-five percent of the residents

surveyed on these issues want the population to remain below one million people for the next 20 years.

Employment of civilian workers within the unit fluctuates with the season from a low of 5 percent to over 13 percent on a county-by-county basis.

The wood products industry in eastern Idaho does not depend heavily upon BLM timber for a portion of its supply. In the past, timber offerings for sale to the private sector have varied from one-half million board feet to four million board feet per year. This type of fluctuation, coupled with the low volume in proportion to Forest Service and private timber offerings, is the reason for the low dependence on BLM timber. This could change for the small operators with an even flow policy of just under four million board feet per year. The trend appears to be an increased dependence upon BLM timber as other forest ownerships are affected by environmental constraints.

The average lumber index for calendar year 1977 was $170.00 per thousand board feet for Douglas-fir. This amount ($170.00) times 3.8 million board feet yields a net worth at the lumber outlet of $646,000.

Implementation of the proposed action could change the economic situation as far as demand for BLM timber is concerned.

LAND USE

The dominant land use of the forest lands of the Eastern Idaho Sustained Yield Unit is livestock grazing. Other uses in addition to timber harvesting include mining, camping, fishing, hunting, sightseeing, and ORV's. These uses can be compatible with one another when conducted in moderation. They must be analyzed carefully on a site-by-site basis as a forest management program is developed.

The BLM lands are intermingled with numerous large and small private landowners as well as large blocks of public lands that are primarily Forest Service and Idaho Department of Lands. There are some recreational subdivision developments scattered throughout the SYU.

It is important to coordinate land-use plans with adjacent landowners. There will be some degree of stability to land-use plans now being developed on the National Forests. However, the RARE II wilderness determination effort has created a certain amount of instability with respect to National Forest lands to be intensively managed for timber production. These kinds of changes in management thrust on both Federal and private lands can alter our plans on a site-by-site basis.

Mining unpatented mining claims is a land use that could affect timber harvest depending upon the date of claim location and waiver

of surface rights under Public Law 167. Claims located prior to July 23, 1955, within a Public Law 167 Determination Area may or may not allow the Federal Government to manage timber depending on whether the mining claimant filed a verified statement retaining the surface management rights. Claims located after July 23, 1955, are automatically subject to Federal agency management. Disposal of surface resources and right of ingress and egress are exercised provided such activity does not interfer with the mining operation or uses incident thereto.

INTERRELATIONSHIPS

Informal discussions have been held with the USFS, Idaho Department of Lands, and the Idaho Department of Fish and Game personnel on future coordination of sales and projects. Discussions have included areas of concern such as time frame, joint sales, areas of critical wildlife habitat, and areas in which one agency will stay out of due to the impacts of more than one project in the same immediate area or vicinity. The use of such meetings and the sharing of harvest plans between the agencies, whether on a five or ten year basis, is a big step forward to coordinating efforts in timber management.

Both the Idaho Falls and Burley BLM Districts have signed cooperative agreements with the Southeast Idaho Council of Governments in Pocatello for monitoring abating and water pollution sources.

CHAPTER 3

ENVIRONMENTAL IMPACTS

This section analyzes the effects of the proposed action. Documentation of the rationale for selection of certain measures and practices for a specific action is not covered here but can be found in the environmental assessment prepared for that particular proposal.

An aspect covered by this document is the general cumulative impact of the many, relatively small actions that comprise the timber management program. Many of the discrete actions taken over a ten-year period may have a negligible impact.

CLIMATE AND AIR QUALITY

Depending upon the extent that the forest canopy is opened, all cutting practices affect the micro-climate. The impact may be insignificant with a light selection cutting, moderate with shelterwood cutting or commercial thinning, or heavy with extensive clearcutting. To varying degrees, each type of cutting increases air and soil temperatures, surface water evaporation, and air movement; and decreases vegetative transpiration and relative humidity.

Reaction of the forest ecosystem to climatic changes due to cutting is variable. Proper amounts of sunlight stimulate tree growth. Too much sunlight or heavily shaded trees can cause shock and death of the tree. Other factors contributing to increased tree

growth after cutting are higher soil temperatures and more available moisture. Increased wind velocities may cause windthrow of trees left after a partial cut or along the edge of a clearcut. Microclimate changes produced by canopy reduction can either favor or inhibit tree regeneration depending upon the species and extent of cutting.

Air is presently of high quality with limited amounts of short-term contamination from wood smoke during slash burning and localized dust problems from roads.

Continued harvesting of timber under the proposed action will result in a seasonal addition of both smoke and dust contamination. However, more complete utilization of wood fiber and the harvesting of accumulating dead fuels will reduce the threat of air contamination caused by wildfire. Nonetheless, timber harvest will require more roads with its accompanying dust problems. Indications are that there will be a net increase of both smoke and dust introduced into the air.

SOILS

The effects of timber harvest upon the soil are interrelated functions of soil, equipment, weather, and topography. For example, a soil may be severely damaged by crawler tractor logging during times of high soil moistures. But the same soils may undergo only

slight compaction if the same operation is conducted when the soil is dry or frozen and protected by snow cover.

By far the greatest soil disturbing activity during summertime logging is road construction. Properly located roads using construction standards that are designed to fit field conditions normally stabilize within the first or second year after they are built. Poorly constructed roads and drainage systems can severely damage the site for future use and production.

Choice of yarding methods has a significant affect on the degree of soil disturbance. Crawler tractor yarding has the greatest impact upon the soil of all methods commonly used. Soil structure is usually destroyed and compaction results on frequently traversed areas. This is prevalent if soil moisture content is moderate to high. Surface runnoff is increased under these conditions because of a loss of cover and reduced permeability.

Yarding methods which generally have moderate impact upon the soil are horse skidding, rubber-tired skidder, jammer yarding, and mobile yarder-loader operations. These methods require more roads and landings than aerial systems. They also disturb a larger percentage of the litter layer and topsoil. Trails where the logs are skidded become scraped and compacted. These two conditions concentrate water and provide areas with overland water flow which can lead to rill and gully erosion.

Areial yarding systems generally have the least impact upon the soil and have been used successfully by the Salmon National Forest. Fewer roads are involved using aerial yarding methods, but the larger landings required for the equipment often result in large cuts and fills. These can be reclaimed to some degree with proper preparation and use of topsoil.

GEOLOGY

Most actions related to timber management have little, if any, adverse effects on geologic features. Roads that are not properly located and constructed, however, can undercut an otherwise stable slope causing an unravelling process on the cut bank to grow into mass failure of the entire hillside.

WATER

As with soil disturbance, road construction has the greatest impact on water quality. Roads built near water courses normally cause higher turbidity levels than otherwise would be expected. Of particular concern are creek crossings during bridge construction and culvert installation. Section 404 Permits from the Corps of Engineers are required for this type of construction.

The adverse effects are greatest when roads are constructed on slopes steeper than 50 percent and excavated materials are wasted by sidecasting. The excavated materials may be carried downslope

into watercourses immediately by gravity or later by surface erosion or sliding and sloughing. As mentioned earlier, excavation for road construction sometimes removes material which supports unstable soils further upslope. This may later result in unstable soil mantle moving downslope as a mass, sometimes damming a stream.

All of the ground skidding and yarding methods have some potential for significant adverse impacts on water quality since all cause some soil disturbance. As discussed in the soil section, crawler tractor yarding causes the greatest impact, cable systems cause moderate impact, and aerial yarding causes least impact.

Other activities that affect water quality are broadcast burning and hot slash fires that expose mineral soil. These impacts are intensified on steep slopes in areas of heavy rainfall.

VEGETATION

Road construction creates the most severe impact on vegetation. In addition to the actual removal of vegetation along the road, extensive vegetative areas below the road cut or fill are covered where sidecast material (soils, rocks) is pushed by tractors, dumped by trucks, or blasted by explosives. Land covered by sidescast is often slow to revegetate. Land covered by the road surface is permanently a non-producer of vegetation except for spur roads that are abandoned and revegetated. Even the latter, however, will normally be incapable of producing vegetation similar to adjacent

land due to their compacted condition. Dust from log hauling may adversely affect plant growth along roads.

The short-term impact of ground yarding systems, such as tractor skidding, is the destruction or damage of undergrowth. Yarding can cause damage to residual trees resulting in rot, particularly in lodgepole pine and subalpine fir. Unless extensive soil compaction or loss of soil by erosion occurs, the long term impact will be to contribute to a relatively early natural regeneration of tree species.

Cable yarding systems have a varying degree of impact on vegetation depending on the cutting method involved. Single tree selection methods have the least impact, whereas clearcutting has the greatest impact regardless of which cable system is used.

The short-term impact of scarification, mechanical brush cutting, and area burning is partial or complete destruction of vegetation. Spot burning of hand piled areas, chipping of slash, hand clearing, cleaning of competing vegetation, mulching, and snag felling have negligible impacts on vegetation. None of the remaining forest development practices damage vegetation. Their short-term impacts are related solely to reestablishment, growth, and protection of vegetation. These practices include tree improvement, tree seeding, tree planting, gopher baiting, and fencing.

ANIMALS

NON-GAME SPECIES

The impact of timber harvest on non-game species is the most difficult to assess due to the species diversity and the wide range of forest habitats in eastern Idaho. Noise and disturbance impacts can be high to those species although these impacts would be short term. The loss of snags and suitable nesting sites for cavity dwelling birds and animals usually have a negative impact.

GAME SPECIES

Major adverse impacts on elk due to logging will stem from destruction of escape and thermal cover coupled with increased public access. Sudden and rather drastic modifications from activities such as logging and the associated roads can alter security levels to degrees which may be intolerable to elk. Beneficial impacts can include increased plant and animal diversity and increased forage for several years.

The same is true for mule deer, bear, and moose except in the case of wintering moose. Roads along willow bottomlands could increase snowmobile traffic resulting in increased harassment to moose in the winter.

Timber management activities that encourage thickets of conifers or that set back the successional stage of the vegetation would

favor blue grouse. Conversely, practices that involve the use of herbicides or other vegetative removal activities such as terracing could have detrimental affects on all species of grouse.

FISHERIES

The potential for adverse impacts on aquatic ecosystems is high. Generally, timber harvest can affect a perennial stream by: increasing the peak flow volume, increasing exposure to solar radiation, increasing the concentration of sediment and soil nutrients, and increasing obstructions in the form of woody debris.

The impact of increased peak flow depends primarily upon the natural resistance of the stream to detachment of bank and channel materials. Streams with low resistance can be severely damaged, causing loss of trout cover, loss of fish spawning gravel, loss of riparian vegetation, and loss of bottom organisms productivity through sedimentation or scouring. Increased sunlight can be beneficial in very cold headwaters or detrimental where it raises temperatures above optimum level.

Increases in sedimentation are extremely detrimental. Sedimentation causes channel changes, loss of fish spawning gravel, reduction in invertebrate productivity, reduction of dissolved oxygen, and increased water temperature. Nutrients from sediment (soil) may cause excessive aquatic plant production, leading to undesirable oxygent fluctuations.

Generally, new road construction, yarding, and skidding contribute an increased sediment load. The quantity and duration of impacts depend upon methods, design, slope, soils characteristics, and rehabilitation and mitigating measures incorporated into the silvicultural plan.

Wood debris can reduce oxygen concentration, cause undesirable channel changes, bank erosion, and hinder fish movements and migrations. In some cases, a minor amount of debris may actually increase fish cover or pool area.

THREATENED AND ENDANGERED SPECIES

The impacts of logging on grizzly bears in the unit is difficult to ascertain at the present time due to the lack of quantitative data on present distribution, critical habitat requirements, survival, mortality, and present conflicts with man in the Hentry' Lake and Island Park areas. Impacts of timber harvest on the grizzly bear has not been adequately assessed.

The impacts of timber harvest on the Northern Rocky Mountain wolf are difficult to assess due to lack of distribution and population data.

Timber harvesting activities near wintering bald eagle roosting areas would disturb the eagles generally between November and March.

Chemicals such as DDT, PCB, mercury, and lead are very detrimental to eagles. Activity near the shoreline of waters used as feeding areas can have an adverse affect.

Known or potential roost trees are important. Such trees can become potential perch trees during breeding season.

New roads constructed near areas occupied by the whooping crane could adversely affect them becuase of the vehicle disturbance factor coupled with increased human activity.

RECREATION

Any action that produces a visible change in the natural forest environment can cause an adverse human reaction. Among development actions with highly visible effects are prescribed burning of slash (atmospheric smoke, charred forest floor); scarification (dust during the operation, disturbance of surface vegetation and soil); and precommercial thinning (slash). Noticeable evidence of protection actions includes fire lines and, if identified as such, the burned areas.

The adverse visual impacts of timber production are partially offset by some incidental visual benefits. Sometimes logging road construction opens up an impressive scenic vista which otherwise would not be appreciated. New roads can increase ORV opportunity, open up new hunting and fishing areas, or enjoyment by sightseers.

Sound, odor, and mood are also part of the landscape character. If given a choice of opportunities, campers would tend to avoid proximity to a noisy logging operation or mechanized forest development project. The noise and dust from such operations would be unpleasant to most recreationists. The combination of sound and odor could shatter the mood of the solitude-seeking wilderness advocate.

CULTURAL RESOURCES

Timber management operations can be very destructive to cultural values, which are generally most valuable when they are undisturbed. These values consist not only of artifacts, features, structures, and other physical remains of the former inhabitant's activities, but they also consist of the spatial relationship among these objects and with the surrounding environment. Soil disturbance on or around sites from such actions as road construction and site preparation will disturb these spatial relationships.

New and better roads into areas of cultural values could provide easy access for vandals and looters. Unauthorized collection by participants in the timber management operations also adds to the loss of cultural values.

One beneficial impact of timber operation is that it will remove or alter ground cover which can reveal cultural values that may not be located otherwise.

The economy's impact of the proposed action on eastern Idaho is generally insignificant, due to the small volume involved in the program when compared to the total volume processed by all the forest products industry. However, it can be important to small mills and logging operators in small communities in the SYU. In setting a program level for a ten-year period with an indication of future harvest levels, there is a stabilizing impact concerning the unit's contribution to the timber industry.

Short-term or permanent losses of forage and other impairment of range livestock operations attributable to the timber management program are insignificant in the overall production of meat. However, these adverse impacts may be highly significant to the individual livestock producer.

Human health and safety can be affected by some forest development practices. Smoke from slash burning may have temporary adverse affects on people with respiratory problems. Visibility, at times, may be restricted where slash burning occurs near roads and highways, creating hazardous driving conditions. These conditions may also occur in conjunction with quarrying and rock crushing activities associated with road construction. Due to the minor overall size of the proposed action these risks are minimal.

Where logs are being hauled out of the forest, there is always the danger of increased traffic hazards to users of the logging roads.

Hazards to the health and safety of workers, both government and industry, can occur in practically all phases of the timber management program. Accidental injuries and fatalities commonly occur during harvesting and removal operations.

The proposed action should have a generally favorable impact on local public attitudes and expectations about BLM timber management. People expect an environmentally sound program and see the proposed practices as meeting that goal. Despite the general agreement, there will be specific actions proposed which will be disagreeable to some people.

The variety of recreational values and the broad array of timber management practices makes some land-use conflicts inevitable. Although some recreational activities may be benefitted by the timber management program, most are not. Quite often a practice may be both beneficial and detrimental at the same time, the choice being dependent upon the user's point of view. As an example, for many years following logging, a cutting unit may have lost all apparent value to a camper or hiker. However, its invasion by vegetation may produce forage for wildlife, making the area attractive to hunters and berry pickers. As another example, surface runoff from a newly constructed, unstabilized forest road will cause varying amounts of turbidity and sedimentation of streams, with adverse effect of fishing success and water sports. The same road may provide access for hunters, berry pickers, rockhounds, bird watchers, campers, and prospectors.

Timber management practices may result in adverse public reaction, particularly in areas of heavy recreational pressure (usually near population centers); in situations involving unique or rare ecosystems or scenery; and where natural attributes create a high recreation potential.

LAND USE

Timber harvests can reduce the compatibility of timberland with adjoining land uses. For example, owners of summer homes may feel that the view from their homesites has deteriorated because of timber harvests. Campers may be disturbed by the noise and activity of an on-going logging operation. Timber hauling operations can damage roads used for hauling. This section should be given considerable thought in the analysis of impacts of individual timber sales.

Compatibility is considered and allowed for in the land use planning process. Subsequent development of adjacent private land for cabins, homesites, or other uses may create impacts on the BLM timber management programs. The BLM programs may not be compatible with new uses of adjoining private lands. Improper logging of adjacent land may adversely affect BLM forest management through watershed damage and increased hazards from fire, insects, and disease.

Since timber harvests, particularly clearcuts, change the character of the land, its suitability for certain activities can be

affected. For example, removal of large, old growth timber may render the area unsuitable for hiking and wilderness-type experiences while changing its value for water production and certain wildlife species.

CHAPTER 4

MITIGATING OR ENHANCING MEASURES

Considering the diversity of specific sites and impacts involved in the various practices, the mitigating measures listed will be taken into consideration on individual forest management operations in the SYU. It is unlikely that all measures will apply to any one area, and subsequent evaluation of individual action may prescribe additional measures not considered in this level of analysis. The process of site specific management planning along with an EAR is an integral part of the timber management plan. It is the incorporation of mitigating measures from individual assessments into contracts for timber sale and forest development that best assures minimum residual impact.

Mitigating measures recommended here assume that BLM forest management actions adhere to the Idaho Forest Practices Act, Title 38, Chapter 13, as the minimum standard for all practices in addition to those measures indicated in the proposed action section of this report.

CLIMATE AND AIR QUALITY

Sites that are normally classified as dry, such as southwest aspects, ridge tops, and vegetative types associated with dry sites, will receive special consideration. Factors affecting microclimate such as soil temperature, evaporation levels, and wind will be considered collectively when making harvest plans.

Dust from road construction and use will continue to be a problem, but can be abated to some extent by watering or oiling when the economics of the timber operation permit.

Smoke from burning slash will be mitigated by integrating burning schedules with weather reports to produce as fast and hot combustion as practicable and to facilitate movement of smoke away from populated areas. More intensive utilization of felled timber holds promise for future abatement of the smoke problem. In situations where prescribed burning of slash is essential and considerable impacts from burning are anticipated, the following mitigating measures may be used:

- The beneficial effects of dead shade, where desired, will be retained by only spot burning slash concentrations that must be removed.

- If a light burn would achieve silvicultural objectives, its application can be timed for a period when burning conditions would favor an easily controlled fire of low intensity.

SOILS AND GEOLOGY

Clearcutting and, to a lesser degree, shelterwood cutting practices shall not be carried out on slopes where the potential for excessive erosion or mass failure exists. Factors affecting slope stability which should be considered include slope gradient, thickness

of the soil mantle, character of the underlying bedrock, precipitation patterns, and the inherent strength of the soil. When these factors appear critical, other cutting practices will be considered. When these other practices, such as selection, shelterwood, etc., are not feasible due to silvicultural, economic, or technical constraints or the fact that the potential hazard remains despite the system of cutting employed, the area will be classified as deferred and removed from commercial timber production.

Tractor logging will be limited to slopes with average gradients of less than 40 percent. Slopes greater than 40 percent will be handled with mobile yarder cable systems or placed in the special treatment category which involves aerial yarding or skyline cable systems. Both of these systems are very new to eastern Idaho.

Tractor skidding will be limited to those seasons and sites where soil moisture is low enough to avoid compaction, rutting, or gouging of the soil. Winter logging will be considered where advantageous to protection of soils. Landings will be located so as not to create excessive sidecast or slope stability problems. Landings on highly productive sites will be minimized. After use, ripping may be necessary to mitigate soil compaction, and the stockpiled material will be redistributed over the landing.

Road alignment and design have important effects on roadside erosion, and effective control must begin in the design phase, since the location of a road determines to a large degree the amounts of

erosion which may occur. The selection of the road corridor provides the opportunity to place a road in favorable relationship to topography, drainageways, soils, and other natural features to minimize the base erosion potential.

During earthwork operations, areas of bare soil will be shaped to minimize storm runoff erosion. Methods of control could include such devices as silt basins, sedimentation ponds, berms, and temporary down drains, swales, ditch pits, and brush barriers. Drainage channels will be constructed early in the grading operation.

Ditches will be kept cleared, culverts unplugged, and drainageways free of debris. Spur roads that are outsloped will be cross-drained and have berms removed on the outside edge except those intentionally constructed for the protection of road grade fills.

The stabilization procedures for erosion prevention include grass seeding or hydro mulching of cut and fill slopes, borrow pits, landings and skid roads, with SCS and BLM approved seed mixtures suited for the locale. Due to the small size and scattered nature of these projects, the use of a hand operated broadcast seeder should prove the most suitable. The best time for broadcast seeding is either late fall or early spring while the site has a snow covering and as soon as possible after the disturbance has occurred. Some sites, like temporary road beds having compacted soils, need some form of mechanical site preparation to break up the compacted surface.

WATER

The adverse effects of logging on water quality will be mitigated by providing streamside buffer strips of adequate width and density to reduce or eliminate sediment laden overland flow from reaching stream channels. All perennial streams and those streams which carry water during peak runoff seasons will have buffer strips. Buffer strips will contain enough trees and shrubs to provide shade for the stream and protection for the streambank. The width of the buffer strip necessary to meet these objectives will be determined by the slope of the ground into the stream channel; topographic shading; tree height, density, and species; stream characteristics (width, depth, and flow velocity); erodibility of the soil; groundwater levels; and precipitation patterns.

Felling timber upslope or along the contour of steep slopes will prevent felled trees from shooting downhill and into or through streamside buffer strips. Trees cut selectively adjacent to natural waters will be felled directionally away from the water. If slash debris does fall into stream channels, it will be removed immediately by cable grapple or hand.

Tractor skidding will not be conducted on fragile slopes near water courses or down a flowing stream channel. Tractor skidding across stream chnnels will be permitted only with properly constructed crossings. Tractor skidding on all areas will be timed so that excessive soil compaction does not occur as a result of high soil moisture.

The following precautions will be observed during the road construction phase:

1. Design roads to minimum dimensions for the proposed use consistent with safety. If it is necessary to traverse short sections of unstable terrain, remedial measures (riprap, extra drainage, etc.) will be included in the road design.

2. Care will be exercised to protect stream channels and banks by streamside buffer strips wherever possible. In the case of roads which approach stream crossings in narrow canyons, the right-of-way clearing width may need reduction below the road to provide a vegetative strip for stream protection. The stream crossing itself will be as narrow as possible consistent with traffic safety. The stream channel will never be used as a disposal site for excavated material from other portions of the road; often stream crossings become unacceptably wide because of this practice.

3. Endhauling the excavated material will avoid long sidecast fills in steep terrain. Disposal sites for endhauling material will be selected with care to avoid overloading slopes and causing mass failures. Fills will be compacted where this practice will contribute to slope stability and prevent road failures.

4. Culverts and bridges will be placed in natural drainageways as near as possible in line with the flow direction to enable a direct unimpeded entrance and exit for the intercepted water.

Use of short, right angle culverts will be avoided. Use of longer and skewed culverts to follow the natural drainage pattern will result in less maintenance costs even though initial installation costs will be higher. Culverts will be installed at frequent intervals to assure that the road subgrade will remain dry and stable. Aprons will be installed on fills under culvert outfalls. Downspouts or other suitable conductors will be used to carry culvert drainage and to dissipate the kinetic energy of this water before allowed to run onto natural slopes.

5. Time the construction and installation of roads, bridges, and culverts so that the stream flow is optimum for completing the required work with minimum degradation of water quality. Stream banks and protective vegetation will be conserved.

6. Culvert ends and bridge abutment slopes which have received concentrated water flows will be stabilized and riprapped. In general, bridge repairs include deck, railings, expansion elements and footings, bulkheads, etc., the latter of which may require some work in the bed of a stream. Materials such as concrete, excess grout, form oil, etc., will not be wasted in the stream. Approach fills and banks will be stabilized to prevent erosion, and trash debris will be removed at completion of bridge site repairs.

Burning will be coordinated with weather conditions to reduce intensity of fire consistent with slash disposal objectives. Overland flows from fire lines may be reduced by waterbars or check dams along the fire line. Filter strips of undisturbed vegetation left along the bottom of the area burn will filter some of the suspended solids from overland flow. These filter strips also reduce the velocity of flow and cause deposition of sediment before it reaches the stream.

VEGETATION

Mitigation of long-term adverse impacts resulting from timber harvest practices is primarily a matter of insuring that the cutting practice used is one that would result in conditions favorable to tree regeneration on the specific sites.

Proper layout of logging units will mitigate most windthrow risk. Windthrow is negligible in shelterwood cutting areas. The three-stage cutting process reduces velocity of wind currents. Wind wind firmness in leave trees also results after the first cutting cycle.

Proper selection of trees to be cut in shelterwood harvesting would improve the genetic composition of the regenerated stand. Foresters must keep the principles of applied genetics in mind when selecting trees for removal. This generally means improving quality while maintaining diversity. Although a successional stage preceding

climax may be the management objective, proper practices would retain site productivity and the potential for plant succession to progress to a climax condition.

Adverse short-term impacts resulting from destruction of vegetation by yarding systems will be mitigated by using only those methods that result in minimum disturbance to understory, shrub, and herbaceous layers, e.g., mobile yarder, skyline, aerial, and horse yarding. Winter logging can reduce damage to herbaceous vegetation where deemed necessary. Mitigation of long-term adverse impacts of various logging methods is, like development and cutting practices, a matter of insuring that resulting conditions are favorable to tree regeneration on the specific sites.

In general, impacts caused by road construction can be mitigated by locating and engineering roads so as to avoid sidecasting where possible. Specific recommendations for mitigating adverse impacts on soil and water are also applicable to mitigation of adverse impacts on vegetation.

Impacts of scarification and area burning can be mitigated by limiting these practices to cool, moist sites, especially those on gently slopes with deep, loam soils. The adverse genetic impact of tree improvement programs can be avoided by adhering to statistical and genetic guidelines relative to number of trees selected per breeding unit for regenerating purposes. Monoculture can be mitigated by planting several species. Long-term adverse impacts from

fire can be mitigated by planting tree species soon after the fire. Short-term adverse impacts can be mitigated by seeding a variety of herbaceous plant species soon after the fire.

Disturbed areas will be artificially revegetated when natural regeneration cannot be reasonably expected in a short period of time. Most of the practices associated with protection, i.e, insect, disease, and fire control, are in themselves mitigating since they are primarily aimed at maintaining the health and vigor of the vegetal components of the forest.

ENDANGERED PLANT SPECIES

Those threatened and endangered species listed in Chapter 1 as possible inhabitants of timber access road location areas in eastern Idaho will be searched for prior to each construction project. Field personnel are being trained to recognize these species.

ANIMALS

Since logging practices occur on such diverse habitat types and impact wildlife species in different degrees and at different times, there is no substititue for on-the-ground inspections; joint discussions involving wildlife biologists, the managers, and other resource specialists; and a complete knowledge of current research information and short-range and long-range management implications of the logging operations.

Where to log, when to log, roads and trails required for removal of timber, off-road closures, slash disposal, livestock grazing on the logged area, including the impacts of water development, must all be considered. The nonconsumptive values of wildlife must also be considered. The value of seeing an elk, for example, in its natural environment rates high with this group of the public. Greater public and other agency involvement is a mandate in the Federal Land Policy and Management Act of 1976 (P.L. 94-579) and must be considered on plans where logging will impact wildlife.

NON-GAME SPECIES

Prior to initiating any harvest activity that would involve the removal of snags suitable for cavity nesting birds, wildlife biologists will examine the total area affected and mark for retention any snag valuable for that purpose. Normally, three to five snags per acre of the type used by cavity nesting birds are left in an area. Research on the subject shows that cavity nexting birds prefer snags over 15 inches DBH and heights under 50 feet. Soft snags are preferred over hard snags, both with less than 50 percent of bark remaining. Tree species desired in decreasing order of priority are Ponderosa pine, Douglas-fir, and lodgepole pine.

Also, bird roost trees are identified to prevent future felling. The idea is to preserve a small group of trees surrounding the identified roost tree and to protect that tree as a future snag.

GAME SPECIES

The following criteria will be followed when dealing with big game species such as mule deer, elk, moose, and black bear:

1. Roads will be evaluated for closure to vehicle use following logging.

2. Roads will be closely evaluatad by a biologist during the preplanning stage where construction involves moose range. Critical areas of concern include, but are not limited to, stream bottoms important for wintering moose.

3. Slash cleanup will be accomplished on all clearcuts. Average slash depth will not exceed 1.5 feet in areas which are important to elk use.

4. Areas of heavy cover are important to wildlife when adjacent to clearcut areas. Careful evaluation of the effects of additional forest harvest on these areas is important and will be done.

5. Full consideration will be given to staggering the clear-cutting practices in at least five-year intervals for any particular drainage rather than logging an entire drainage in any given year. This will minimize disturbance and allow for natural succession of herbaceous cover desirable for elk (5-7 years), especially in lodgepole pine forested land, and would provide escape cover during and immediately following logging.

6. Livestock grazing on clearcuts following logging will be evaluated and controlled where necessary. Development of livestock water to encourage livestock use of clearcuts will be evaluated early in the preplanning stage to avoid conflict with elk habitat management.

7. Cutting will not be allowed where the maintenance of timber cover is necessary for elk, moose, and mule deer. This is particularly true with respect to elk calving areas which will be intensively inventoried prior to any harvest activity.

Roost trees used by blue grouse will be identified and protected as described under non-game species.

FISHERIES

Any impact on stream habitat must comply with State and Federal water quality standards. Mitigating measures will be designed to prevent deterioration of in-stream and riparian vegetation which provide food production, cover, and reproduction of fish and other aquatic organisms, as follows:

1. Buffer strips of timber will be left between any road or cutting unit and perennial stream.

2. Road and trail construction proposals will be evaluated early in the planning stage to eliminate deficiencies in construction, maintenance, and timber harvest which, in aggregate, constitute unacceptable damage to water quality and adquatic habitat.

3. To assure meeting quality standards, personnel of the Idaho Department of Fish and Game will be consulted on all proposals for road development where alteration of fisheries habitat could be expected.

4. Riparian vegetation will be given a high level of protection sufficient to maintain natural stream temperatures or comply with State water quality standards. Where degradation is anticipated, or damage is inevitable, full consideration will be given to alternate routes or modification of the proposal.

THREATENED AND ENDANGERED SPECIES

Logging activities in the area designated as critical habitat east of the Henry's Lake-Island Park area will be evaluated as to the adverse impacts on the grizzly bear. The Interagency Grizzly Bear Study Team will be contacted prior to preparing the site specific environmental assessment as to their evaluation of the impacts. As additional knowledge on grizzly habits and habitat requirements becomes available, that information will be incorporated in site specific plans.

As mentioned in the impacts section of this report, studies are lacking as to habitat needs of the Northern Rocky Mountain wolf. Prior to any timber activity on BLM lands in the Monida Pass area, both the Idaho Department of Fish and Game and the U.S. Fish and Wildlife Service will be contacted as to the most current information and their analysis of the impacts.

A publication entitled Bald Eagle Management Guidelines, Oregon-Washington was prepared by the U.S. Fish and Wildlife Service to cover human activity, including logging, with respect to impacts and recommendations for the preservation of the eagles. The recommendation within the publication will be closely followed as well as any other measures necessary to insure no impacts to the birds or their habitat.

Any forest management activity that could involve bald eagles will be coordinated with the U.S. Fish and Wildlife Service.

RECREATION

A primary mitigating influence is the Bureau Planning System, whereby areas of outstanding scenic quality or human interest value are identified and excluded from the timber management program or receive modified management to preserve these values.

VISUAL RESOURCES

The visual impact of cutting practices and logging operations will be mitigated by various means. Particularly in sensitive areas, use of continuous canopy cutting methods is required. One concept employs a system of modified shelterwood cutting which defers final removal of the forest overstory (dominant trees) until understory regeneration is large enough to present a forest-like appearance.

Visual impacts will be reduced by several measures. The appearance of smoke in the atmosphere from area and spot burning of slash will be minimized by smoke management technology. This involves the coordinated effort of meteorologists and public and private forestry agencies to integrate burning schedules with weather reports so as to produce rapid fuel combustion and quick dispersal of smoke into the upper atmosphere. Alternative slash disposal measures which create no smoke may be feasible, e.g., chipping or burying of slash.

CULTURAL RESOURCES

Complete surveys of the eastern Idaho SYU to identify cultural resources have not been undertaken. However, each proposed ground-disturbing activity will be preceded by a complete survey of cultural resources or part of the environment assessment reports which precede each site-specific timber sale, and protection will be provided as necessary.

Cultural resources that are on or eligible for nomination to the National Register of Historic Places shall not be subjected to any timber management activity which may have an effect upon the site without first providing the Advisory Council on Historic Preservation a reasonable opportunity for comment.

As added insurance against inadvertent damage to cultural resources, a stipulation will be placed on all timber sales which will require the operator to notify the BLM immediately if any cultural

values are discovered during the course of any logging operation. The stipulation is as follows: If in connection with operations under this contract the Purchaser, his contractors, subcontractors, or the employees of any of them discovers, encounters or becomes aware of any objects or sites of cultural value on the contract area such as historical or prehistorical ruins, graves or grave markers, fossils, or artifacts, the Purchaser shall immediately suspend all operations in the vicinity of the cultural value and notify the Authorized Officer of the findings. Operations may resume at the discovery site upon receipt of written instructions and authorization by the Authorized Officer.

SOCIO-ECONOMIC CONDITIONS

If harvest levels can be uniform from year to year, they will be a stabilizing influence on the small mills and logging operators in outlying communities in the SYU. Occasional increased or decreased sales may be necessary to offset shortages or depressed markets. This ability is limited by the harvest volume proposed. Our program is designed around a ten-year plan so some harvest variation is permissible on a yearly basis as long as the total ten-year harvest level is met.

Safety hazards associated with log trucks and the motoring public will be mitigated by proper road design, providing adequate turnouts for passing, warning signs, and use of dust retardants.

The support of prospectors and mining claimants to timber management practices will result from improved roading. Good communication with livestock producers can do much to alleviate conflicts between timber production and grazing. In most cases, timber management objectives can be met with deferment of grazing for seedling establishment rather than long-term withdrawal of an area from grazing.

LAND USE

Periodic updating of management framework plans will identify and resolve land use conflicts as private lands adjoining BLM commercial forest lands are developed. Timber management activities can be made compatible by adjusting the timing and intensity. Involving the public, particularly adjacent property owners and planning agencies, at the proper time on important issues will result in minimal land use conflicts.

Careful selection of cutting practices, road layout, and cutting areas can greatly reduce impacts on adjoining land. Better land use planning on private and public lands will reduce the impact of development and logging.

Periodic reconsideration of land use planning resource allocation is necessary. All compartment plans include habitat typing for evaluation of site potential in each stand. Fragile areas and other specific problem areas are also identified in the compartment plan.

CHAPTER 5

ADVERSE IMPACTS DESPITE MITIGATION

This section discusses the adverse impacts which can be expected to remain after mitigation. It is a compilation of unavoidable impacts not subject to mitigation and describes residual adverse effects likely to remain.

Because this is an assessment of a program rather than a specific proposed action, this analysis is necessarily subjective. The effectiveness of mitigating measures must be estimated based on thorough execution procedures and enforcement. Furthermore, it is assumed that the contractor or private operator will be cooperative.

CLIMATE AND AIR QUALITY

There is the potential for cutting practices to have some unavoidable adverse impacts on local climates. For example, it may be necessary to clearcut a specific insect-infected timber stand on a severe site and to burn the slash to forestall an epidemic. The resulting exposure may create micro-climatic conditions which make regeneration of the site very difficult. Deviation of the general climate from its normal pattern for a year or two after cutting may cause micro-climatic changes which inhibit regeneration and favor the invasion of seral vegetation.

Short-term air pollution by engine emissions and dust during logging operations is usually unavoidable but relatively insignificant.

The unavoidable adverse impacts of road construction and log hauling on local climate are relatively minor. Air quality will be temporarily degraded by engine emissions and dust in the vicinity of road construction operations and along logging roads. Micro-climates will be permanently modified in limited areas on road rights-of-way.

Despite improved smoke management technology, there will continue to be occasions when smoke from burning forest fuels will find its way into the lower atmosphere over population centers. These occurrences will be significant only as a temporary nuisance. There is the potential for misapplication of prescribed burning techniques due to human error in weather forecasting or judgement in conducting burning operations.

SOILS AND GEOLOGY

Some soil erosion and soil compaction will occur during all cutting, yarding, and road building operations. Erosion will occur on sidecast material and particularly on steep terrain while compaction will prevail on the more level sites involved in yarding, loading, and roads. Landslides and gravitational erosion cannot be completely eliminated and will periodically occur along roads as a result of freeze-thaw actions and from the water saturation of slopes during the rain and winter seasons. Severe rainstorms and spring runoff will occasionally cause blockages of drainage facilities and road washouts resulting in soil movement and loss. Accidental

spills of oil, etc., will occur, but their impact can be expected to be minimal.

Development practices, such as scarification, mechanical-trenching and furrowing, area burning, spot burning, and hand clearing will result in some localized erosion due to vegetal destruction. Fire line construction can be expected to result in some erosion.

WATER

Depending upon the harvest method used, the water yield from the disturbed area will temporarily increase. A temporary decrease in water quality may occur, with the normal duration of these changes lasting one, maybe two years. Removal of vegetation will cause minor changes in seasonal distributions of runoff and in the magnitude of spring runoff flows. On sites with unstable soils, higher peak-flow could conceivably initiate a cycle of stream erosion and slope failures with a decrease in water quality.

Watercourses near or adjacent to road construction projects can be expected to carry additional suspended sediment during construction. This sediment may be derived from excavation, embankment, and bridge construction, culvert installation, and surface runoff from road and fill surfaces. Subsequently, culverts slopes, and surfaces may fail from water saturation, heavy loading, or blockage by debris following heavy rains or spring runoff. Runoff will bypass regular channels and carry sediment to the streams.

Heavy rains may cause an increase in slope instability with a large debris avalanche or soil slump resulting. In such events, buffer strips may not prevent masses of debris and soil from reaching a stream.

Logging activity will cause some unavoidable soil distrubance which can result in increased runoff during periods of heavy precipitation. Reduction of crown cover will increase snow depths on timbered areas which can increase total snow melt runoff.

VEGETATION

Short-term adverse impacts like the replacement of existing vegetation with brush will frequently be accepted as a cost of avoiding adverse long-term impacts such as excessive reforestation time lag. An example of this process occurs in the practice of mechanical slash piling and burning. The prime objective of this procedure is to prepare the site for natural or artificial regeneration by removing enough of the existing vegetation to allow the desired trees to become established.

ANIMALS

In most cases, the most significant adverse impacts to wildlife resulting from timber harvest programs are the development of roads and resultant ease of human access to wildlife habitat. Increased human activity, traffic, and noise will be most detrimental to big

game animals. While much of this distrubance is short duration and can be mitigated with road closures, adverse impacts cannot be completely avoided. The same types of impacts also affect non-game species.

As far as bald eagles and whooping cranes are concerned, timber management activities should have little or no affect on these species because projects will not be proposed that could adversely affect these birds.

Vegetative changes resulting from timber management activities may have an affect on habitat and animal population use and distribution. Impacts beneficial to one species may be detrimental to another. Existing animal patterns of use may be altered by both disturbance due to logging and vegetative changes.

RECREATION

The timber management program will continue to cause some deterioration of landscape character values, even when all feasible mitigating measures are carefully applied. Atmospheric smoke from prescribed burning, dust from road construction, and logging will be visible at times for short periods. Clearcuts and seed tree cuts will cause some detraction from the natural appearance of the forest until regeneration is again established. Road cuts and fills and soil disturbances will have the most lasting negative effect on aesthetics.

CULTURAL RESOURCES

Damage to unknown sites and subsurface sites not discovered during project surveillance would be almost certain to occur. In cases where salvage mitigation is required, the impact would not be fully mitigated. Salvage of cultural resources is an unavoidable adverse impact. Once excavated, a site is effectively destroyed and removed from future research considerations which may utilize new techniques. Salvage is rarely as effective as non-salvage research programs, partially because of time limitation, funding, and personnel competence. Emergency salvage, required by unexpected discoveries during project initiations, would be even less effective.

SOCIO-ECONOMIC CONDITION

Despite safety programs and safety consciousness of employees, accidents that cause injury and occasionally deaths can happen. Accidents involving the motoring public and log trucks and other logging equipment may occur as long as simultaneous use is made of the road.

There should be no unavoidable impacts on nearby residential or commercial enterprises. An exception may occur in cases where unsuitable and incompatible land uses, such as an unplanned subdivision, encroach on a management area and, upon considered evaluation, it is determined that restriction of timber management activities in deference to the encroachment would not be in the best interests of the public.

LAND USE

There will always be some cases where timber management activities will impact adjoining lands, particularly where forested private land is used for residences or some recreational activities. The land use planning process resolves or compromises conflicts; it cannot always solve them.

CHAPTER 6

SHORT-TERM USE VS. LONG-TERM PRODUCTIVITY

The timber management program is, of course, not a short-term use but a continuous use which involves different actions being applied to different parts of the forest over time. Most of the individual practices carried out on a particular area involve a short-term use.

The length of the proposed action, which is considered the short term, is limited to a ten-year period from 1979 to 1989. At that time a new inventory, new multiple-use considerations, re-evaluation of management practices, and current public involvement will produce a revised allowable cut for the next ten-year period. This chapter largely deals with evaluating the effect of a ten-year proposal on the forest productivity beyond 1989. In computing the level of raw materials available for harvest from the SYU, harvest volume and all forest management practices were projected for a 400-year period. This is done to assure that the timbered lands can sustain a particular level of harvest for a long period. The proposed sustained level of harvest is possible assuming certain intensive management practices such as precommercial and commercial thinnings and artificial reforestation are successful. If funds for these practices are not available, the ten-year harvest volume will be adjusted downward to a level that is sustainable for the 400-year computation period.

CLIMATE AND AIR QUALITY

The practices associated with the proposed action do not significantly affect the climate or air with regard to short-term use or long-term productivity of the forest.

SOILS AND GEOLOGY

While some development practices may have a short-term detrimental impact on localized areas, most practices will not affect long-term productivity. The area occupied by permanent roads will not be productive during the life of the road.

Reduced productivity of areas occupied by temporary roads can be expected.

WATER

Since snowmelt forms a significant portion of the seasonal runoff, the increased snowpack that occurs following cutting, particularly clearcutting, may be beneficial by increasing water yield on a short-term basis. Adverse impacts would include a possible decrease in water quality and increase in peak flows. Where slopes and stream channels are stable, a small increase will have no adverse effects and suspended sediment concentrations will remain relatively stable. Since the management plan calls for continuous scattered harvests throughout the SYU, this is a long-term benefit. Periodic

erosion along roadways resulting from seasonal rains and storms will have a minimal impact on the productivity of the aquatic ecosystem assuming proper construction standards and techniques were used.

VEGETATION

The short-term use of land for timber harvest will generally have little, if any, adverse impact on long term vegetative productivity provided the necessary mitigative measures are carried out. Vegetation is a renewable resource, capable of re-establishment after timber harvest and forest development actions. Through natural revegetation and man-controlled forest development actions, the forest resource can be maintained. Management will increase vigor of forest vegetation. Periods of declining growth and stagnation of trees will be reduced. Practices proposed will not have a significant effect on diversity of vegetation.

ANIMALS

Plant succession following logging activities over time will modify both the quality and quantity of wildlife habitat. The vegetation available after logging, especially herbaceous and browse species, will benefit larger mammals such as elk, moose, and mule deer. The long-term benefits following logging would outweight the short-term effects (2-5 years to reach successional stages desirable for elk, deer, and moose). The effects of logging would provide

long-term benefits not currently possible with the control of wildfires. Logging would provide successional stages originally possible through natural fires and desirable for wildlife species associated with these stages of plant succession. The increase in numbers of people using a timbered area due to permanent access roads will have a long-term disturbance affect on all big game animals.

RECREATION

Most forest management practices will cause some alteration to the visual, sound, or odor characteristics of the landscape. All major change agents will be analyzed in the site specific environmental assessments. They will have some negative short-term influence on a site specific basis for some recreational users.

CULTURAL RESOURCES

The potential impacts on cultural resources will be analyzed in the site specific environmental assessments.

SOCIO-ECONOMIC CONDITIONS

The timber program will have a slightly favorable short-term and long-term effect on the economies of the SYU. It will lend some additional stability to the local lumber and logging industry. Grazing use may be temporarily restricted on areas where livestock conflict with seedling establishment.

Some timbered areas will lose their undeveloped atmosphere. With the cutting and road building activities, these areas will not be suitable for wilderness related activities. Long periods of time (20-100 years) will be necessary to reverse the process.

CHAPTER 7

IRRETRIEVABLE RESOURCE COMMITMENTS

This section addresses the long-term impacts of the timber management program from the perspective of irrevocable uses of resources; for example, massive erosion, destruction of human interest values, elimination of endangered species and their habitat, and irreversible changes in land use. The consideration of these consequences is based upon residual impacts after mitigating measures have been employed.

CLIMATE AND AIR QUALITY

No irretrievable resource commitments are identified for the environmental component of climate and air quality.

SOILS AND GEOLOGY

Erosion induced by removal of the vegetative cover and the construction of roads produces an indeterminable amount of localized mass wasting which cannot be reversed or retrieved. When the vegetal cover is removed from an area where steep slopes occur and moisture is abundant, erosion will sustain itself. Where rock types and structure are conducive to weathering, the erosional rates will increase. Erosion tends toward an equilibrium over geologic time. However, in terms of the human life span, erosion caused by man's activities results in an imbalance.

Approximately three percent of the land area will be committed to mainline roads, which constitutes a relatively irretrievable use; however, the trend towards aerial logging systems which require less roads would reduce these percentages in the future. This percentage of area lost does not include landslides which may result from logging. The soil, rock, gravel, and other materials used to construct the roads and structures represent a form of depletion and a permanent commitment of resources. In a theoretical sense, however, the decision could be made for roads to be abandoned and the right-of-way returned to productive acreage.

WATER

Watershed values of a drainage are irretrievably committed, to a degree, where bare rock has been exposed or exposures of bare rock have been enlarged by massive soil movements. Landslides can also destroy a natural stream channel, resulting in its relocation and the accompanying permanent loss of soil and other materials. In this unit, however, these commitments are unlikely.

VEGETATION

No irretrievable impacts of timber management practices are anticipated on vegetation. Even where mistakes may occur and result in extensive delays in tree regeneration, natural plant succession and technical progress can be expected to restore the site to a forest condition. Only where landslides expose rock surfaces can

the forest condition be considered irretrievably lost. Some modifications or substitutions in species composition are likely to occur. An examination on the "project" level of the possible occurrence of rare and endangered or threatened plant species will be accomplished to determine if the plants listed earlier do in fact exist on BLM timber sites. If so, appropriate mitigating measures will be taken.

ANIMALS

No irretrievable effect on animal population is anticipated as a result of the proposed action.

RECREATION

Roads, and to some extent the cutting areas, will create a permanent change in landscape character. To the extent that the resulting landscape offends a viewer, the impact is irreversible.

CULTURAL RESOURCES

Inadvertent damage or destruction of archaeological sites would probably be an irretrievable loss. If sites were not completely destroyed, enough salvage might be possible to retain their human interest value.

Conceivably, historic sites that are the works of man could be restored should they be destroyed. However, their values would be diminished or lost.

SOCIO-ECONOMIC CONDITIONS

Accidents among timber related employees that cause permanent injury or death are, of course, irreversible and irretrievable. This also applies to members of the public injured or killed in accidents involving log trucks or other equipment.

LAND USE

There will be no irreversible and irretrievable loss of lands for residential, commercial, and industrial uses. Any loss of soil caused by timber management activities can be considered irretrievable in terms of potential agricultural development of an area. Some areas of forest range may be committed to timber production; however, this classification does not constitute an irreversible action. However, any amount of livestock production foregone where grazing capacity is affected by timber management objectives represents an irretrievable loss.

CHAPTER 8

ALTERNATIVES TO THE PROPOSED ACTION

Three alternatives have been considered to the proposed action on the SYU. These are:

ALTERNATIVE A. A PROGRAM OF NO TIMBER MANAGEMENT

ALTERNATIVE B. MAINTAINING A TIMBER MANAGEMENT PROGRAM BASED ENTIRELY ON NATURAL PRODUCTION

ALTERNATIVE C. UTILIZATION OF EXOTIC SKIDDING EQUIPMENT

ALTERNATIVE A

A PROGRAM OF NO TIMBER MANAGEMENT

Description of Alternative

This alternative would require the cessation of all timber harvesting on public lands in the SYU. It is assumed that some of the protection practices associated with timber management in this alternative, such as fire suppression, forest pest control, reforestation of denuded areas, and trespass control actions will continue to be carried out to some extent to protect and enhance non-timber values and uses.

It is important to point out that the Bureau administered lands are intermingled with private or other publicly managed forests, often as small isolated blocks or in a checkerboard pattern of squares 640 acres or smaller. Consequently, even without a Bureau

timber management program, the timber management practices carried out by adjacent private landowners or managers will continue to have an impact on the environment of the Bureau administered forests insofar as road building and log hauling across the public lands and other activities are concerned. However, these impacts are beyond the scope of this analysis.

Environmental Impacts

CLIMATE AND AIR QUALITY

The cessation of the prescribed burning of approximately 200 acres of logging debris and slash each year will eliminate the temporary nuisance of the resulting smoke. In general, however, there will be little or no change in air quality under the no-program alternative.

SOILS AND GEOLOGY

Soils will remain stable as a result of little surface disturbance, and erosion will be limited to localized areas where wildfires and natural slides or slumps occur.

WATER

The closed forest canopies will reduce water yields, particularly from snow zones and watersheds where spring rainfall constitutes a significant portion of total annual precipitation. Flood and other

runoff peak levels will generally be reduced. Water quality would be the highest naturally obtainable. Water temperatures would also be generally the lowest obtainable under natural conditions.

VEGETATION

This alternative will result in the preservation or creation, over time, of forests comprised primarily of overmature stands of trees. Current timber management objectives call for the harvest of crop trees reaching 100 years of age. No timber cutting would result in many trees reaching ages of 200 to 400 years and older, at which time natural mortality would occur and regeneration would begin. The pathological, or natural rotation, would result in a significant reduction in the growth of wood. For example, an acre of trees harvested over five successive rotations of 100 years each will grow two to three times as much wood as found on an acre of 400-year old trees. There will be a long-term trend towards climax types of vegetation which represents the mature or final stage in succession. This evolution will eventually produce, on some sites, vegetative types far different than now exist. Generally, climax vegetation is more tolerant and stable, and their canopies will eliminate considerable vegetation from the forest floor due to competition for sunlight, moisture, and nutrients.

Windfalls, individual snags, and groups of dead trees would be common. Their deterioration would result in a large amount of

debris on the forest floor. This, together with general stand decadence, would increase the susceptibility of the forest to fires, insect infestations, and disease. Control of these destructive agents would be hampered in unroaded areas.

ANIMALS

The elimination of thinning and harvesting practices may have an adverse impact on those wildlife species which require low vegetation as a source of food or habitat. Consequently, reduction in the populations of such animals as deer, elk, rabbits, and ruffed grouse could be expected. On the other hand, old growth forests will support greater populations of small birds, squirrels, insects, and other organisms that inhabit the high foliage canopy or the soil. The existence of snags and deadtop trees will improve the habitat for such wildlife as eagles, hawks, owls, and woodpeckers by serving as nesting and perching sites and as food sources. Furthermore, the undisturbed forest will provide more suitable habitat for species which are particularly sensitive to human activities. Generally, however, the more uniform canopy cover of the undisturbed forest, having less "edge" between different vegetative types of canopies, would tend to produce a lesser variety of both flora and fauna than a forest under timber management. Large accumulations of dead timber on the forest floor will make some areas inaccessible to large animals.

In general, high water quality will be maintained with resulting benefits to aquatic wildlife. Due to reduced surface runoff, stream sedimentation will be generally limited to natural eutrophication, thereby helping to stabilize the habitat of fish and aquatic organisms. However, stream debris in the form of windthrown timber will increase and in some instances will result in inaccessible barriers to fish movement.

RECREATION

The natural succession of plant and tree species will take place over time, and the preponderance of over mature or old growth stands will be generally pleasing to most forest viewers. Reduced road construction along with the elimination of the odor, sound, dust, and smoke of other operations will contribute further to the "natural" appearance or mood conveyed to forest visitors.

The increased presence of lightning-prone flammable dead trees or snags resulting from natural mortality and insect and disease infestation in conjunction with the reduced access resulting from less road construction, will increase the risk of naturally caused fires and man's ability to control them. This will be offset in part by the elimination of fires stemming from timber management practices. Nonetheless, the increased incidence of wildfires will significantly impact aesthetic as well as other values. The increase in unharvested dead trees due to natural mortality and insect and disease infestations will also affect aesthetic values.

CULTURAL RESOURCES

The possible destruction of archaeological and historical sites and values caused by timber management operations will be eliminated. Unknown archaeological and historical sites which are buried and may have been uncovered under the proposed action will not be discovered.

SOCIO-ECONOMIC CONDITIONS

The local socio-economic consequences of this alternative would have some affect on smaller mills and logging operators in outlying communities in the SYU.

The revenue foregone to the U.S. Treasury and applicable local governments from the sale of timber is insignificant when spread over four districts.

The socio-economic impacts of a no-timber management program could conceivably be offset in part by any gains in non-timber related forest uses and values such as wilderness attractions. These could stimulate or increase corresponding forms of economic activity; however, the net effect could be expected to be a decrease in employment and gross national product.

The relatively high quality of undisturbed streams will appeal to fishermen so long as accessibility and fish habitat are unimpeded. Conversely, there will be fewer recreational opportunities for hunters, since the population of predominant game species such as

deer and elk may be decreased due to reduced food supplies. The reduction in the diversity of animals due to the elimination of the "edge effect" created by cutting practices will adversely affect some naturalists and bird watchers. On the other hand, opportunities will be available to observe relatively unique species or habitats associated with unharvested forests.

Reduced road construction will prevent vehicular access to many areas, thereby minimizing or precluding some recreational uses and the development of facilities such as campgrounds and picnic areas. In other cases, reduced road construction will encourage primitive hunting use in areas not disturbed by logging or road construction activities.

Many of the recreation related environmental impacts are offsetting as far as the various public user groups are concerned. However, this alternative will probably be most favorable to those segments of the public who enjoy the non-commodity values or non-intensive uses of the forest such as hikers, naturalists, and wilderness seekers.

LAND USE

The impact of this alternative as it relates to the local requirements for the multiple use management of the public lands would require exploration and, if necessary, the applicable laws changed. Conflicts with adjoining land uses which may occur under

the proposed action would be eliminated. However, the no-action alternative may also create conflicts with adjoining land uses.

Mitigating or Enhancing Measures

CLIMATE AND AIR QUALITY

No mitigation is required with Alternative A.

SOILS AND GEOLOGY

No mitigation is required with Alternative A.

WATER

No mitigation is required with Alternative A.

VEGETATION

Seral plant communities could be maintained in a portion of the forest stands through the use of fire. Natural fires and prescribed burns can be utilized to manipulate plant communities away from climax. Maintenance or creation of the "edge effect" and understory vegetation required by certain wildlife animals would result. Heavy accumulations of fuels on the forest floor, which pose a severe fire hazard and create a barrier to large animal movements, would be reduced.

Mitigation of dangers to rare and endangered and/or threatened plant species, if identified, would not be required with Alternative A.

ANIMALS

No mitigation is required with Alternative A.

RECREATION

No mitigation is required with Alternative A.

CULTURAL RESOURCES

No mitigation is required with Alternative A.

SOCIO-ECONOMIC CONDITIONS

Mitigation of the loss of revenue and employment in the forest products and secondary industries is not possible.

Future reduction of primary game animals such as elk and deer due to loss of desirable seral vegetative communities can be partially mitigated through the use of fire as described under vegetation mitigation.

LAND USE

No mitigation is required with Alternative A.

Residual Adverse Impacts

Only the environmental components that are expected to receive residual adverse impacts as a result of Alternative A are addressed below.

VEGETATION

The use of fire to manipulate vegetation is a valuable tool. However, fire is not a substitute for timber management practices in most cases. The majority of forest communities will continue their succession toward climax plant communities during the next several decades and centuries. Reductions of desirable understory vegetation for large animals will result in lower carrying capacity. Thus, populations of large animals will be reduced.

Future mortality of insect infested and diseased mature timber will create large volumes of forest fuels which are conducive to the ignition and spread of intense wildfires and also create barriers to large animal movement.

SOCIO-ECONOMIC CONDITIONS

The loss of revenue and employment resulting from not managing the forest lands presently designated for timber management will be permanent. Approximately $190,000 in revenue from stumpage will be lost annually. While the jobs and revenues contribute only a small

amount on a statewide basis, they are very important to some individuals and small communities.

Reduction of big game populations resulting from predicted vegetative trends and conditions will have a probable adverse effect on revenue derived from hunting.

Short-Term Uses Vs. Long-Term Productivity

The no-timber program would generally result in reduced land productivity. Climate, air quality, soils, recreation, and water quality will improve under this alternative for an indefinite period of time.

Long-term production of what is presently desirable vegetative products will decline. Animal use and human activities dependent on these products will be adversely affected.

Irreversible Actions and Irretrievable Resource Commitments

The only irretrievable resource commitment under the no-action alternative is the loss of land productivity through non-use of timber resources. The growth lost through mortality would be irretrievable. However, should a no-timber management land use decision be reversed in the future, accumulated growth would be retrievable.

ALTERNATIVE B

MAINTAINING A TIMBER MANAGEMENT PROGRAM BASED ENTIRELY ON NATURAL PRODUCTION

In this alternative, timber growth, and consequently timber yield, is regulated by the forest's natural ability to reproduce itself following harvest without any cultural or artificial treatment by man. This alternative would have a decadal sustainable harvest level of 21 MMBF in the eastern Idaho SYU. Intensive management practices account for 44.7 percent of the proposed action sustainable volume. The impacts of this alternative would be essentially the same as described in Chapter 3, Environmental Impacts. Data in Chapters 4 through 7 would also apply to this alternative.

ALTERNATIVE C

UTILIZATION OF AERIAL SKIDDING EQUIPMENT

This alternative consists of utilizing sophisticated log skidding systems which are foreign to the SYU locality. Helicopters, balloons, and skyline cable systems are used in Idaho forests where timber values and volumes are high. Volumes and values of timber located on BLM lands in the SYU will not currently justify the use of these costly skidding systems. Environmental impacts associated with these skidding systems would be essentially the same as those described in Chapter 3. The major advantage they provide over conventional skidding methods described in the proposed action is less

total soil disturbance (fewer roads and skid trails) and resulting adverse effects caused by the disturbance. Greater impacts to soil are created by the need to construct larger landings for the equipment to operate. The location of these landings is critical, both from a soil impacts point of view and the efficiency of yarding in relation to timber locations in view of high cost of operation. As aerial systems become more efficient, this alternative will become viable.

CHAPTER 9

CONSULTATION AND COORDINATION

Informal consultation has been initiated with the U.S. Fish and Wildlife Service concerning the potential impacts on the endangered animal species covered under the Threatened and Endangered Species section. At this time, consultation is continuing with the results to be incorporated into the final copy of this report.

The Endangered Plant Species section of this report has been coordinated informally with Mr. Robert Steele of the Intermountain Forest and Range Experiment Station located in Boise, Idaho. In addition to assisting with the identification of potential problems with plants mentioned in this report, Mr. Steele also offered to help train field people to recognize these plants in the field.

CHAPTER 10

INTENSITY OF PUBLIC INTEREST

This section will be completed after public comments are received on this draft of the Environmental Analysis Record for the eastern Idaho Sustained Yield Unit.